PNGAF MAGAZINE ISSUE # 9J W3 of 19th Nov 2022

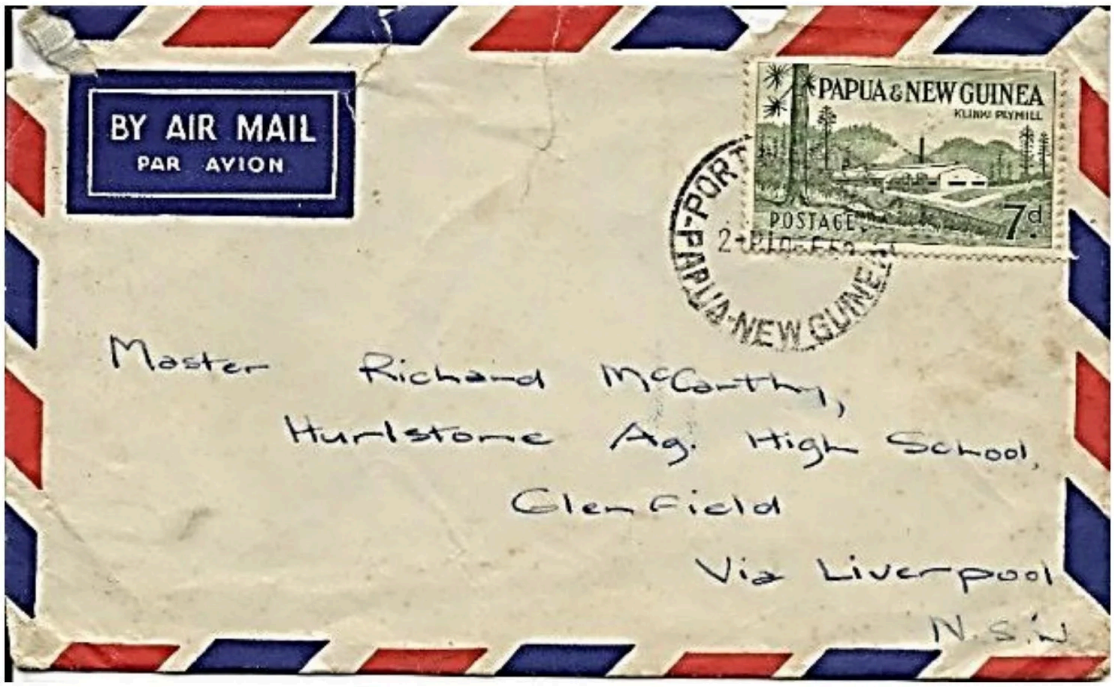
PNG WOODS

PHASES OF INDUSTRIAL DEVELOPMENT TILL 1975

Editor R B McCarthy[1] 2022

[2]

More than one stamp sold!!



[1] District Forester TPNG 1963-1975

[2] CNGT stamp First day cover. Courtesy Dr Gary Bacon

TABLE OF CONTENTS

"FORWOOD" page 3
PNG WOODS Statistics Forest Industrial Development - 1951 till 1975 page 5
EARLY MAN page 6
Need to Protect Traditional Landowners' Rights page 8
ARRIVAL OF THE EUROPEAN page 9
Opportunists/Entrepreneurs- S*andalwood and New Guinea Walnut* page 10
1902 to 1928 Sacred Heart Mission Sawmilling NB page 11
1905 Alexishafen Sawmilling page 13
1908 Gilbert Burnett page 16
1911 James Mann page 19
1913 Marienberg Sawmill page 21
1920 Lack of Wood Preservation Treatments page 24
1920/21 Commonwealth New Guinea Expedition page 27
Need for correct Institutional Framework for Forest Management page 29
1921 Aropokina Sawmill CM Sawmill page 31
1920 -1925 Lane Poole's Assessment of TPNG's Forest Resources page 33
1928 Sacred Heart Mission Sawmill Ulamona and Vunapope NB page 37
1935 Lane Poole Forest Resources of the Goldfields of New Guinea page 41
1936 An Attempt at Institutional Strengthening page 50
1939-1945 WORLD WAR 2 - *Sawn Timber and Round timbers* page 51
July 1943 Conference re Utilisation of the Forest Resources of TPNG page 54
Australian ArmyWW2 Sawmilling Endeavours page 56
1946 WAR EFFORT REBUILDING – *Sawn Timber* page 74
1946 -1955 TPNG Forests Yalu Sawmill page 75
1946 - 1961 Kerevat Sawmill New Britain page 77
1946 Numa Numa Sawmill Bougainville page 80
1947 FOREST PRODUCTS RESEARCH WORK CSIR AUST/ PNG page 81
Bill Heather TPNG Forests 1947-1955 page 82
1948-1963 Australian TPNG Forester Cadetship Scheme page 85
1948 FAO PNG page 86
1949 ECONOMIC DEVELOPMENT PNG – *Potential of Wood Fibre* page 87
Potential of wood fibre - *Cutch* page 87
1952 TPNG Wood Industry Status by Jim McAdam MM page 90
Potential of wood fibre - *Sawn Timber/Plywood Manufacture* page 92
Commonwealth New Guinea Timbers Ltd (CNGT) page 93
1957 FOREST POLICY STATEMENT - HASLUCK page 98
1958 Seventh Commonwealth Forestry Tour page 98
1960's FOOT REPORT page 104
1968-69 DEVELOPMENT PLAN PNG FOREST INDUSTRY page 107
1969 Status Forest Industry Exports page 108
Potential of wood fibre - *Pulp and Paper* page 110
Case Study JANT Project Madang Gogol TA page 110
Case study Vanimo TA Project page 112
UNDER THEIR WATCH, WHAT WAS ACHIEVED? page 113
McAdam MM - 1938-1959 page 114
Suttie - 1959-1970 page 115
McIntosh/White – 1970-1975 page 116
References page 1119 **Acronyms page 120**

"FORWOOD"

The question of how to make the best use of PNG's forest resources has been and still is a complex issue. It is affected by the laws of the market, supply, demand, and competition, coupled with environmental concerns and even by history intertwined with traditional owners' practices of subsistence agricultural systems using forest regeneration fallow methods.

Always a major issue in the implementation of development assistance efforts that adopt a sustainable livelihoods approach, is that to alleviate poverty in the first instance there is the need to provide food, shelter, and fuel. This necessitates cutting down forested land to grow crops and to obtain materials for shelter and fuel for heating.

During the period up to 1975, there was a need for PNG as an emerging nation, to develop its forest sector to assist in creating its own economy utilising its resources (including wood fibre) but at the same time ensuring peoples' interests were protected. The Papua New Guineans owned the lands on which the forests grew. This created an enormous task, because given the pattern of traditional land ownership, the landowners had no direct or community investment in an overarching forest sector institution.

Globally, wood is grown in three structures; State; industrial forestry companies and landowners. In Papua New Guinea, all wood fibre resources were privately owned by traditional owners. The issue facing landowners worldwide is that their wood fibre prices are taken from State forest revenue systems which are nominally negotiated at less than the cost of sustained production.

Much of the work of Australian foresters prior to 1975 was to establish some format by which individual landowner groups could expect reasonable returns for their woods. The involvement of communities in forest management was a cornerstone of Australia's forest management development in PNG.

Australian foresters had to ensure that any forest management systems developed, must have an ecological basis of rainforest management, within a sphere of multiple use of forest resources, encompassing subsistence agricultural methods.

[3]*FAO stated that during the early development of a country, it is not financially practicable to establish a series of properly integrated forest industries or special industries that can utilize all available products of a forest. Planning must be on a practical business basis and the initial start must be made with industries that are both technically easy to establish and sufficiently profitable to amortize the capital investment. It is a question, above all, of markets, although even the initial industries should be designed with a view to their ultimately fitting into a pattern of fully integrated use of the forest as markets and finance permit.*

At the same time, there was an enormous need to develop wood preservation methods for PNG timbers. Throughout PNG's history, there were no long-standing timber structures. This was because the sapwood of all PNG timbers and the heartwood of some PNG timbers are liable to attack by wood destroying fungi, boring insects, and termites. In addition, all

[3] UNASYLVA Vol 8 # 3 of 1954

untreated timber placed in saltwater is liable to attack by a variety of organisms collectively known as marine borers.

The business of creating PNG forestry was to build a better PNG and at the same time ensuring PNG's wood fibre was an increasingly strategic resource for tomorrow.

At the same time, given the enormous demand for fuelwood throughout PNG, major forest extension programs were initiated and undertaken by Australian foresters to ensure fuelwood production, especially in areas of sparse tree cover.

Fuel wood *Acacia managium* Markham Valley via Lae PNG.

Photo credit Dick McCarthy 1995.

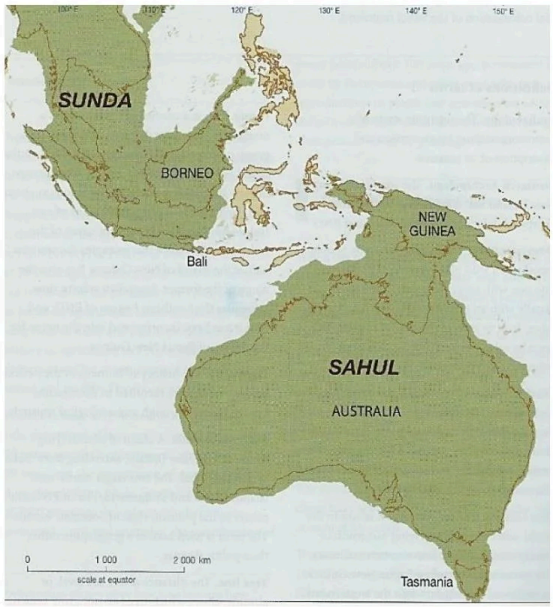
PNG WOODS STATISTICS FOREST INDUSTRIAL DEVELOPMENT 1951-1975

ANNUAL LOG HARVEST[4]				ANNUAL EXPORT STATISTICS				
Year	**Conifer M3**	**Non conifer M3**	**Total M3**	**Logs '000 m3**	**Sawn '000 m3**	**Ply '000 m3**	**Veneer '000 m3**	**Woodchip '000 Dry tonne**
1951-52	17347	29894	47241	4.6	2.5	-	-	-
1952-53	23065	28369	51434	2.7	2.1	-	-	-
1953-54	35338	40548	75886	1.9	3.3	0.96	-	-
1954-55	61015	55891	116906	6.0	6.6	9.26	0.5	-
1955-56	59915	72838	132753	6.4	9.3	9.56	0.1	-
1956-57	52653	69712	122365	6.1	7.3	10.73	-	-
1957-58	48131	74111	122242	2.4	7.2	11.85	0.1	-
1958-59	43721	77553	121274	2.1	8.8	11.4	0.9	-
1959-60	42756	86086	128842	3.5	11.6	13.64	1.0	-
1960-61	45634	109353	154987	3.4	8.2	9.78	0.7	-
1961-62	46892	113018	159910	4.8	6.6	11.79	0.8	-
1962-63	39541	143466	183007	35.4	9.0	7.67	0.8	-
1963-64	50633	172585	223218	46.4	11.0	9.26	0.7	-
1964-65	51647	205568	257004	35.3	12.5	3.74	0.7	-
1965-66	54647	269471	324118	113.6	12.4	7.67	0.9	-
1966-67	65431	306449	371880	113.6	12.6	9.34	1.2	-
1967-68	73061	348020	421081	143.6	14.2	10.69	2.2	-
1968-69	71052	332452	403504	102.3	17.3	10.45	2.9	-
1969-70	70936	443573	514509	193.3	17.3	11.94	2.0	-
1970-71	75149	655767	730916	429.6	13.7	11.78	3.1	-
1971-72	75546	794114	869660	409.1	24.9	9.09	2.9	-
1972-73	48323	650196	698519	424.7	30.4	13.04	3.3	-
1973-74	66222	916780	983002	655.2	51.6	15.71	5.0	7.2
1974-75	74629	729193	803822	383.3	31	12.4	3.5	51.2
TOTAL	**1293073**	**6725007**	**8018080**	**3129.3**	**331.4**	**221.75**	**32.7**	**58.4**

[4] Dept of Forests PNG Annual Report 1974-75

EARLY MAN

The first intervention[5] into PNG's Forest sector was early Man who was a hunter and food gatherer. Archaeological evidence indicates that humans arrived on New Guinea perhaps 60,000 years ago. They probably came from Southeast Asia during an Ice Age period when the sea was lower and distances between the islands shorter. Although the first arrivals were hunters and gatherers, early evidence shows that people managed the forest environment to provide food. There are also indications of Neolithic gardening having been practiced at Kuk while agriculture was developing in Mesopotamia and Egypt.



The Sunda and Sahul landmasses as about 50,000 to 60,000 years ago when people first came to Sahul[6].

The second intervention into PNG's forested lands occurred some 5-10,000 years ago when new arrivals brought with them the knowledge of gardening and the plants to cultivate, most of which had their origin in the rainforests of Southeast Asia. They brought basic elements for a subsistence economy: plants like taro, yam, banana, and coconut as well as three domesticated animals – the pig, dog, and chicken. A few native plants suited to cultivation they found in PNG as sago palm, sugar cane, certain types of bananas and breadfruit.

Establishing their subsistence economy, the people settled along coastal strips, on densely wooded islands, on jungle clad ranges and in the great rainforests of the hinterland. Living in such isolation from one another, they developed distinct customs, traditions and over 700 languages and dialects. For unknown centuries, these early inhabitants split in groups and clans and living in remote hamlets and villages, were completely lost to the rest of the World.

Yet, varied as they were in tribes, clans, customs, and languages, they shared in one common invaluable friend – the natural forest of the land. Despite the centuries of subsistence gardening, over 70 % of PNG's land mass is still covered by forest.

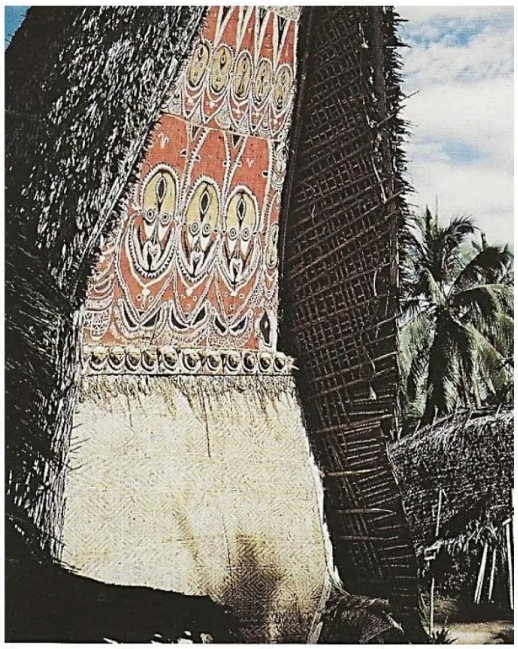
For thousands of years, these people as the sole inhabitants of PNG, found that the forests of PNG made a vital contribution to their lives and livelihood. To the hunter, the forests meant birds and animals for food and personal adornment fur, and plumage more brilliant than the rest of the world had seen. In the forest clearings people made gardens. From the forest wood, people shaped their primitive garden implements, carved their spears, bows and arrows, their clubs and other weapons for hunting and war. The forests gave them fuel, bark, and fibre for clothing. It provided timber for shelter and thatching for roofs. The forests gave them their

[5] PNGAF Mag #1 of 1st oct 2020

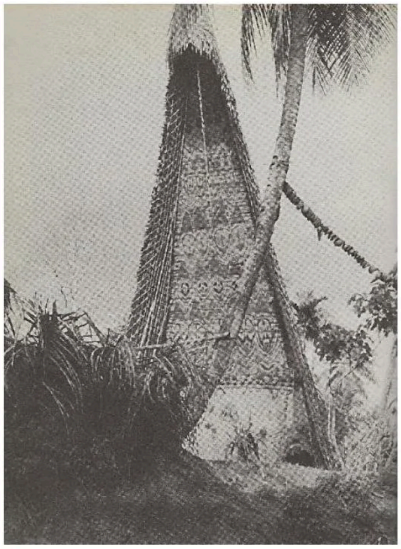
[6] Bourke RM and Harwood T *Food and Agriculture in Papua New Guinea.* ANU Press 2009

sole means of transport i.e., the canoe log. The people whose technologies included bone, wood, and stone tools, had a productive agricultural system.

From the smallest yam storage house to the great *Haus Tambaran* 30 metre long and 15 metres high, their skills were practical and often highly developed.



Belam cult house (Haus Tambaran) of the Maprik Region[7].



Haus Tambaran or spirit house.[8].

Coastal dwellers looked to the forests for materials to fashion their canoes, fishing nets and traps, for the fibre to bind their great multiple log sea craft and even caulking for their craft came from the fruit of a jungle tree. In the whole of the land, the canoe log was the basis of their sole means of transport, for these people used neither wheel nor beast of burden.

They traded along the coast (mainly in pottery, shell ornaments and foodstuffs) and in the interior (exchanging forest products for shells and other sea products.)

Photo taken in 1887 of large Lakatoi used for trade between Port Moresby and the Gulf of Papua.

[7] Photo credit Crawford House Press ISBN 1863330364.
[8] Photo credit J K McCarthy *Patrol into Yesterday* 1963.

NEED TO PROTECT TRADITIONAL LANDOWNERS' RIGHTS

Early people realised the importance of forests for their source of their livlihoods and they have acted both to protect them and to promote the growth of useful trees. PNG Forests have been managed sustainably for thousands of years.

The aim of development has always been to reduce poverty. In its earliest forms, the emphasis was on overall economic growth. Later there was increasing focus on distributional impacts and improving the welfare of the poorer. More recently, focus on meeting basic needs, then on food security and later livelihood enhancement. The evolution of forestry development has reflected these changes.

The Forests of Papua New Guinea are not owned by the government but by the clans and tribes, as in most of the countries of the Pacific.

In 1974 a mere 89 000 ha were State owned and even this was contested by the people.

The government must negotiate with the clans and tribes for the use of the forest resources. Many of the traditional ownership groups however are very reluctant to sell forest land even if it is not required by them for development. They usually are only prepared to sell the timber rights for a specific period up to 25 years.

At the end of 1976, under the Forest Act 1936, government had purchased the timber rights of 2 226 000 ha. Often this purchase is quite complex.

For example, over an area of 63 000 ha in the Gogol and Ramu valley near Madang there are as many as 250 district land owning groups with 8 different languages among a population of only 2 300 people. With all owner groups an agreement must be reached before industrial development can start.

In the Land Groups Act of 1974 there is a provision to recognize clans as cooperatives and the "Land Dispute Settlement Act" provides for disputes over land, boundaries etc.

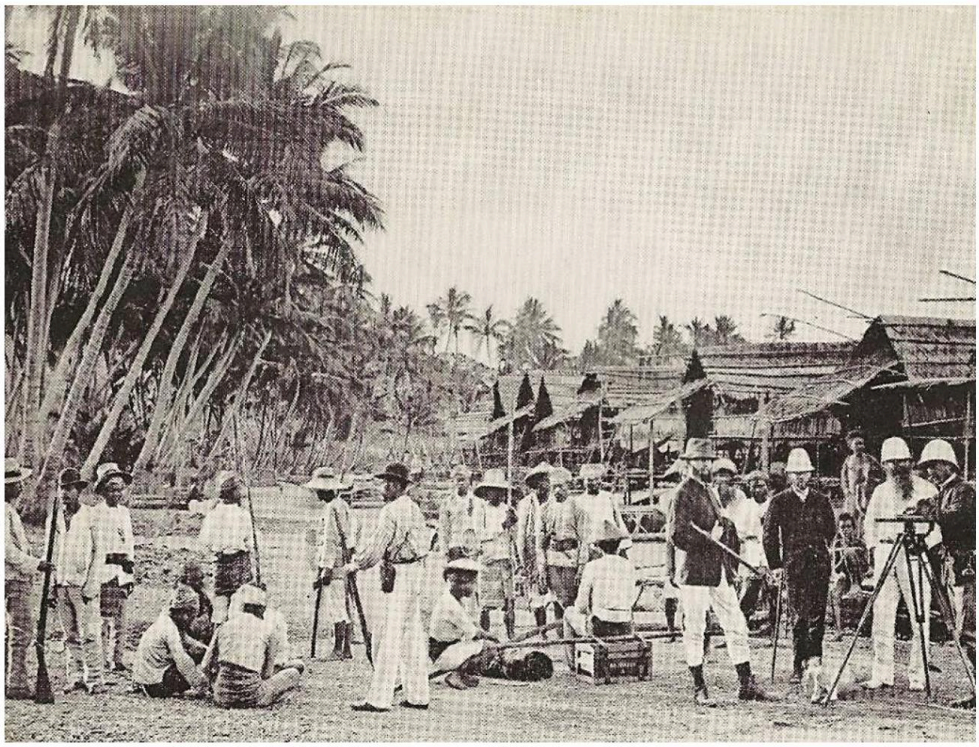
Under the Forestry Act of 1971 timber owners can directly deal with the logging company after the minister in charge of forestry matters declares the area as a "Local Forest Area". Under Forest Act 1937 landowners may sell small quantities of timber up to approximately 50 m^3. Some cutting is allowed on freehold property.

[9] Unasylva FAO 1981

ARRIVAL OF THE EUROPEAN

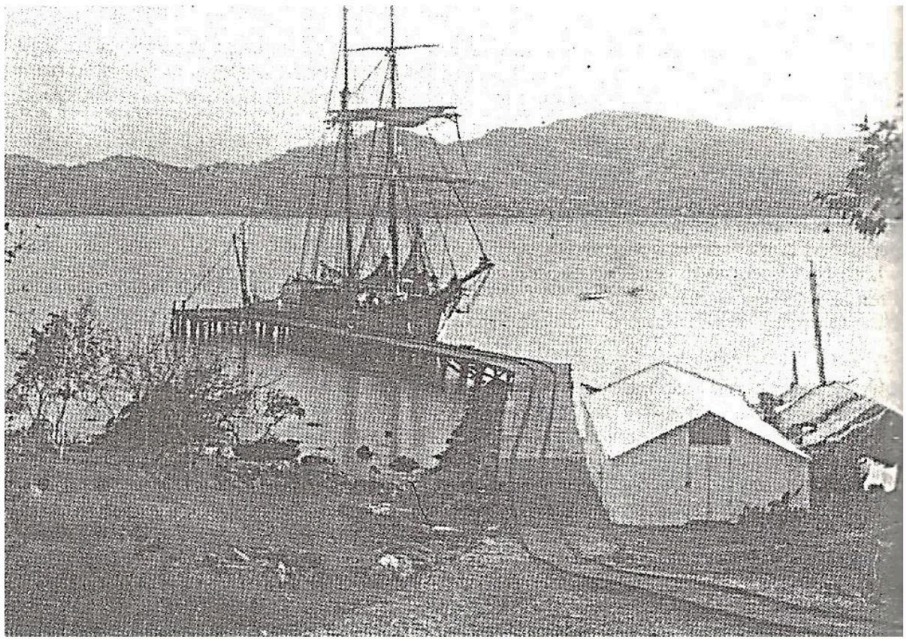
The third intervention came in the 19th century with the arrival of the European brought far-reaching and permanent change and a slow but inevitable mutual awakening of PNG to the rest of the World.

Initially the newcomers had little impact on PNG's forested land or the role the forests played in the customary life of the people.



1885[10] . An expedition preparing to set out from Port Moresby in 1885 for the crest of the Owen Stanley Ranges.

Source. Commonwealth Dept. of Territories. 1959.



1897. Burns Philp wharf Port Moresby with railway.

Source PNG National Archives.

[10] Reference PNGAF Mag #2 of 7/10/20.

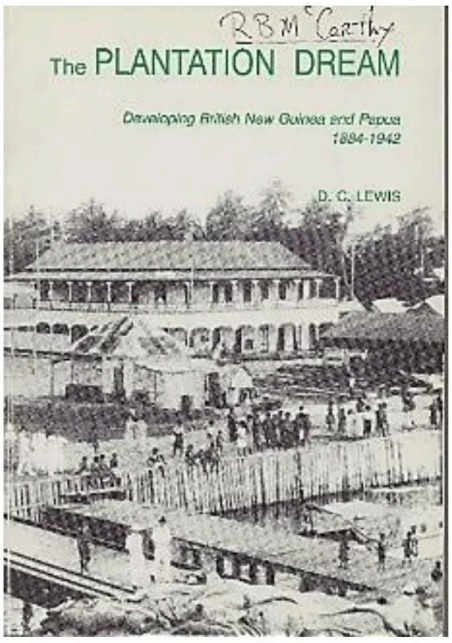
OPPORTUNISTS / ENTREPENEURS- ***Cedar, Sandalwood and New Guinea Walnut***

Australia administered Papua from 1901 and declared it a Commonwealth Territory in 1906.[11] It took over German New Guinea during the First World War and was mandated to administer it by the League of Nations in 1920. The Territories attracted little interest in Australia in the 1920s, their combined European population was slightly under 2000, their exports were unimportant to Australia, their commercial history was poor, and they required grants to administer. Nevertheless, they attracted men, like Judge Hubert Murray (1861–1940) and Staniforth Smith (1869–1934) who were remarkably dedicated to good government. The only scientist they employed was the Government Geologist, Evan Stanley (1885–1924). However, their botany had long attracted collectors, particularly of the orchids. A formidable British Lieutenant-Governor, Sir William MacGregor (1846–1919), had even sent specimens gathered on his ascent of Mount Victoria to Ferdinand von Mueller, the Government Botanist in Victoria, in 1889.

When Murray was appointed Administrator of Papua in 1907, cedar logs were being exported, but there was only a little practical knowledge of the other species.

McAdam[12] reported that with the arrival of the white man, it was found there was a scattering of valuable trees which were attractive to buyers elsewhere. Some attempts were made to float out easily accessible logs of species such as cedar.

In the period from European contact and settlement in the late nineteenth century, to the outbreak of World War 2 in the Pacific, the timber industry was concerned mainly with speculative exploitation of cedar, sandalwood from around Port Moresby, and New Guinea walnut from New Britain and New Ireland[13]. The utilisation of the forests was mostly incidental to other activities like gold mining or agricultural plantation development.



The wharf at Samarai in 1927. Source. Samarai Views 1927. Collection John Oxley Library Brisbane.

Lewis[14] provided a detailed analysis of land settlement by Europeans and the early vicissitudes of plantation agriculture in British New Guinea and Papua up until the outbreak of war in the Pacific in 1942.

[11] PNGAF MAGAZINE ISSUE # 9A of 15th March 2021

[12] J B McAdam' address to Papua and New Guinea Scientific Society's annual report of 1952 "Forestry in New Guinea"

[13] *New Horizons* 1973 Jacaranda Press.

[14] Lewis DC *The PLANTATION DREAM* -Developing British New Guinea and Papua 1884-1942

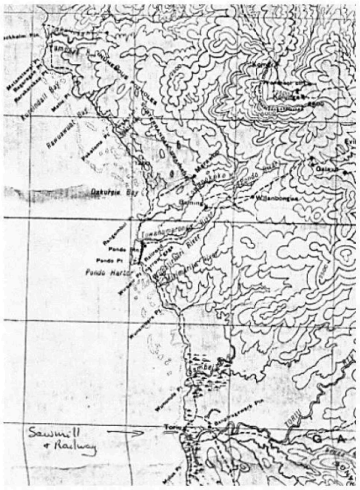
1902 to 1928.

SACRED HEART MISSION NEW BRITAIN[15] Toriu River to Kurindal NB[16]

The first Catholic missionaries from the French Most Sacred Heart of Jesus order, arrived at Matupit Island in Simpsonhafen in September 1882 and established a mission station at Vunapope near Herbertshoehe (Kokopo) in 1889.

They actively sought commercial ventures establishing plantations, sawmilling, and investigated starting a brewery. They dominated the sawmilling industry in the Islands region for the next seventy years.

Saw milling operations by the Sacred Heart Mission began on the Gazelle Peninsular in 1902 at Toriu River and then in 1917 moved to Kurindal and finally to Ulamona in 1928.



Source Mandated Territory of New Guinea Annual Report 1921 - 1922 p 69 – 70.

Their Toriu River Sawmill with a 700 mm gauge timber logging railway timber sawn was operational by 1902. It supplied sawn timber for their base at Vunapope near Kokopo.

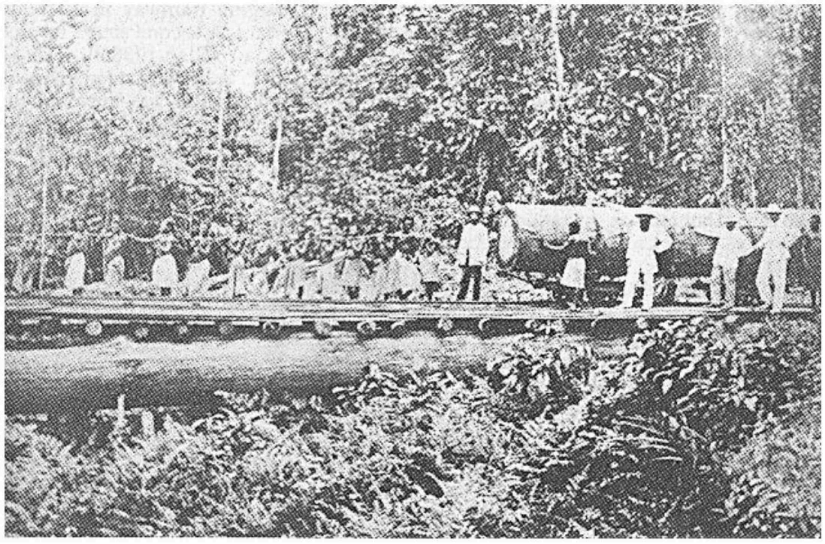
Das Sägewerk am Toriu.

Sacred Heart Catholic Mission (Vunapope) sawmill at Toriu River 1906 to 1913.

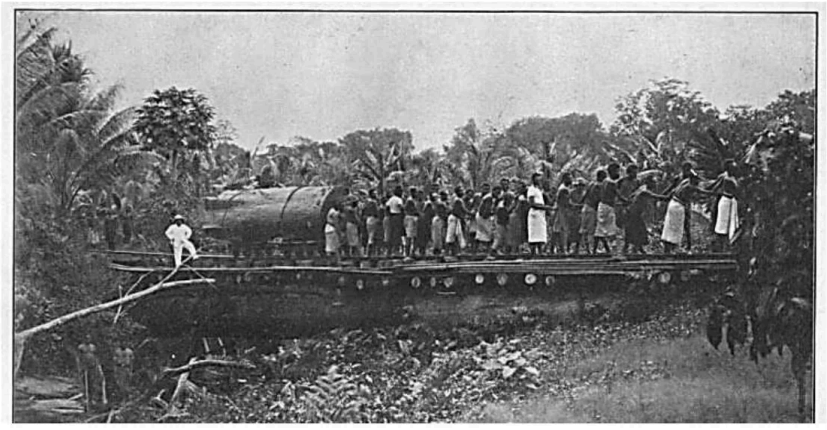
Source Michael Pearson.

[15] *End of the Line* - A History of Railways in Papua New Guinea Bob McKillop & Michael Pearson UPNG Press 1997.

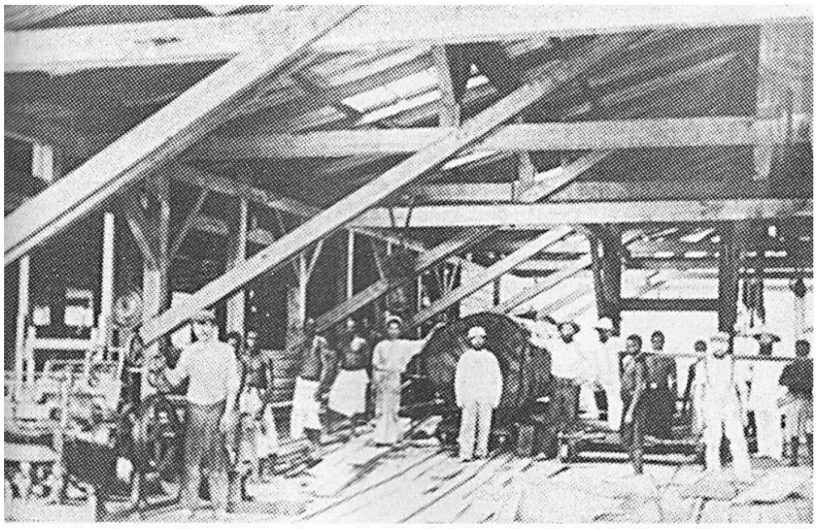
[16] Reference PNGAF Mag #2 of 7/10/21 p2.



Mission labourers hauling a record Eucalyptus deglupta log on the Toriu River logging railway around 1910 with German missionaries supervising. Source PNG National Library photo 314 Historishes Bildmaterial our dem Archives des staatlichen Museums fur Volkerkunda Dresden.



Source. Der Transport zum Sagewerk; Das grobe Gatter; Arbeiter im Sagewerk; Das Sagewerk am Toriu.

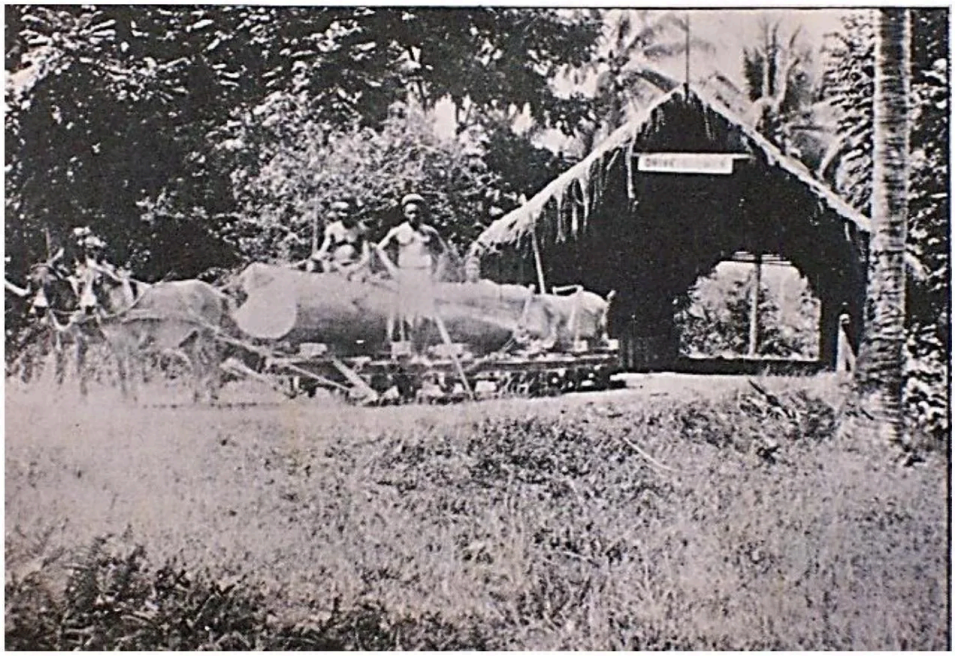


View of the Toriu River Sawmill around 1902-1917. Source Michael Pearson PNG National Library photo 313. Source: Pioniere der Sudsee - Werden und Wachsen der Herz = Jesu Mission von Rabaul zum Goldenen Jubilaum 1882 - 1932. p117, 118, 132 & 177.

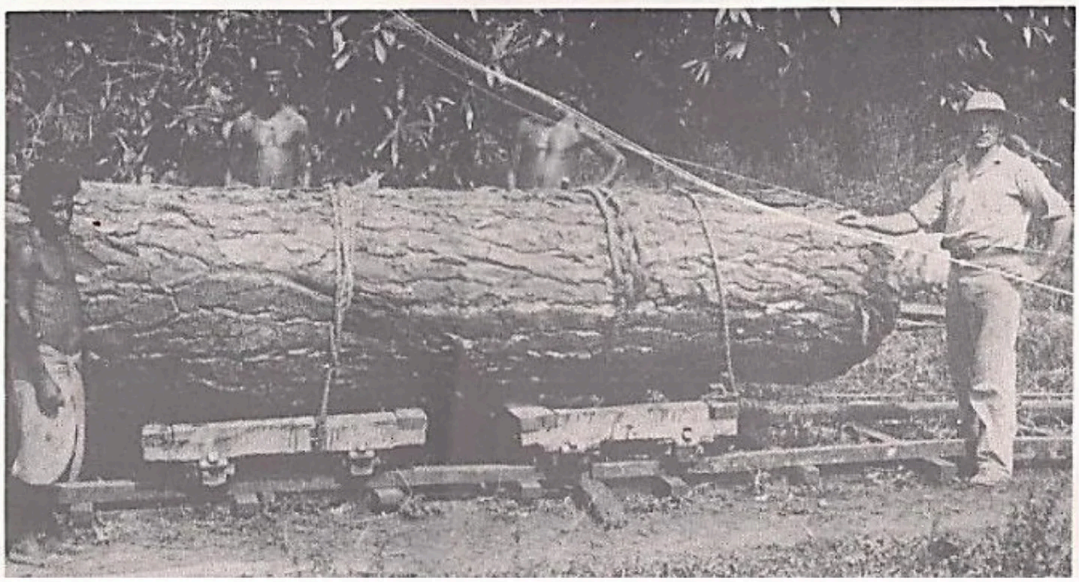
In 1917 the mill moved to Kurindal a few miles north. There was a small saw milling area of Nambung Saw Milling Company owned by Bolten Bros near Massava. *Source: Mandated Territory of New Guinea Annual Report 1923 - 1924 p 80.* In 1928, the application for a timber lease by the Catholic Mission of Most Sacred Heart of Jesus for 2010 hectares at Ulamona was successful. They closed their mill at Kurindal and established a new mill at Ulamona.

1905 ALEXISHAFEN SAWMILLING[17]

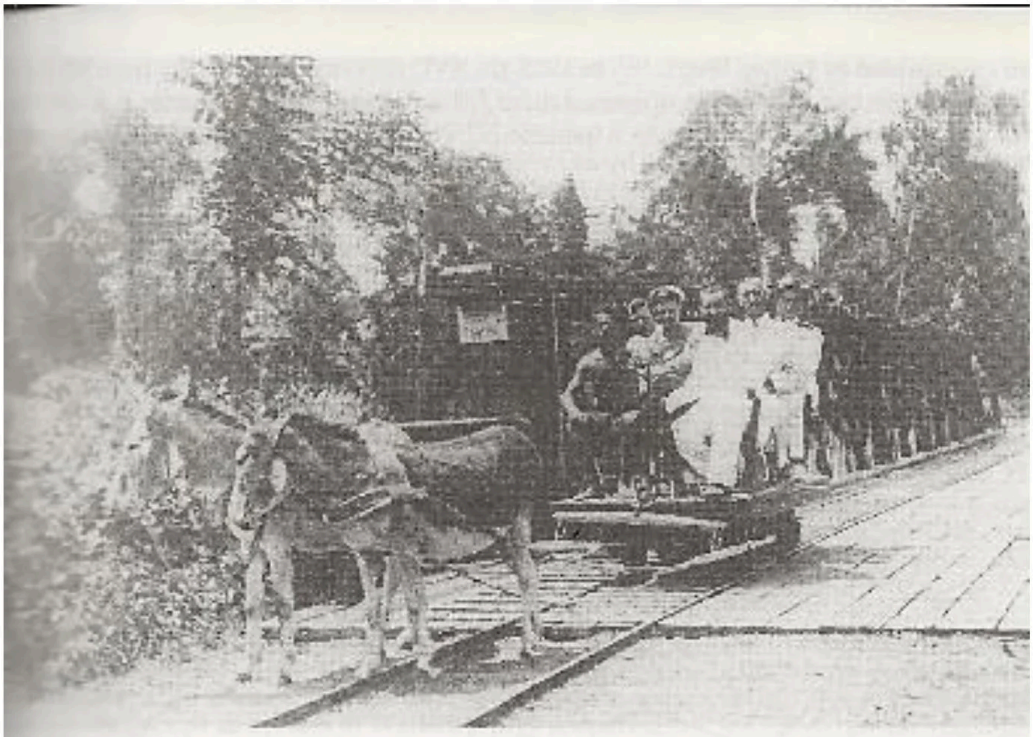
German New Guinea's most ambitious industrial enterprise was established in 1905 by the SVD Mission at Alexishafen on Sek Harbour. A large steam powered sawmill was in operation by the end of 1905. At first the logs were cut within the immediate area of the mill, but it was soon necessary for a 700 mm gauge railway to be constructed some 4 km into the forest to haul logs to the mill. There were several substantial bridges including a roofed bridge spanning the Bigges River.



Donkey tram pulling logs over cover bridge. at Bigges River. Source SME Wagner ELC PNG Butaweng SM.



[17] *End of the Line* - A History of Railways in Papua New Guinea Bob McKillop & Michael Pearson UPNG Press 1997

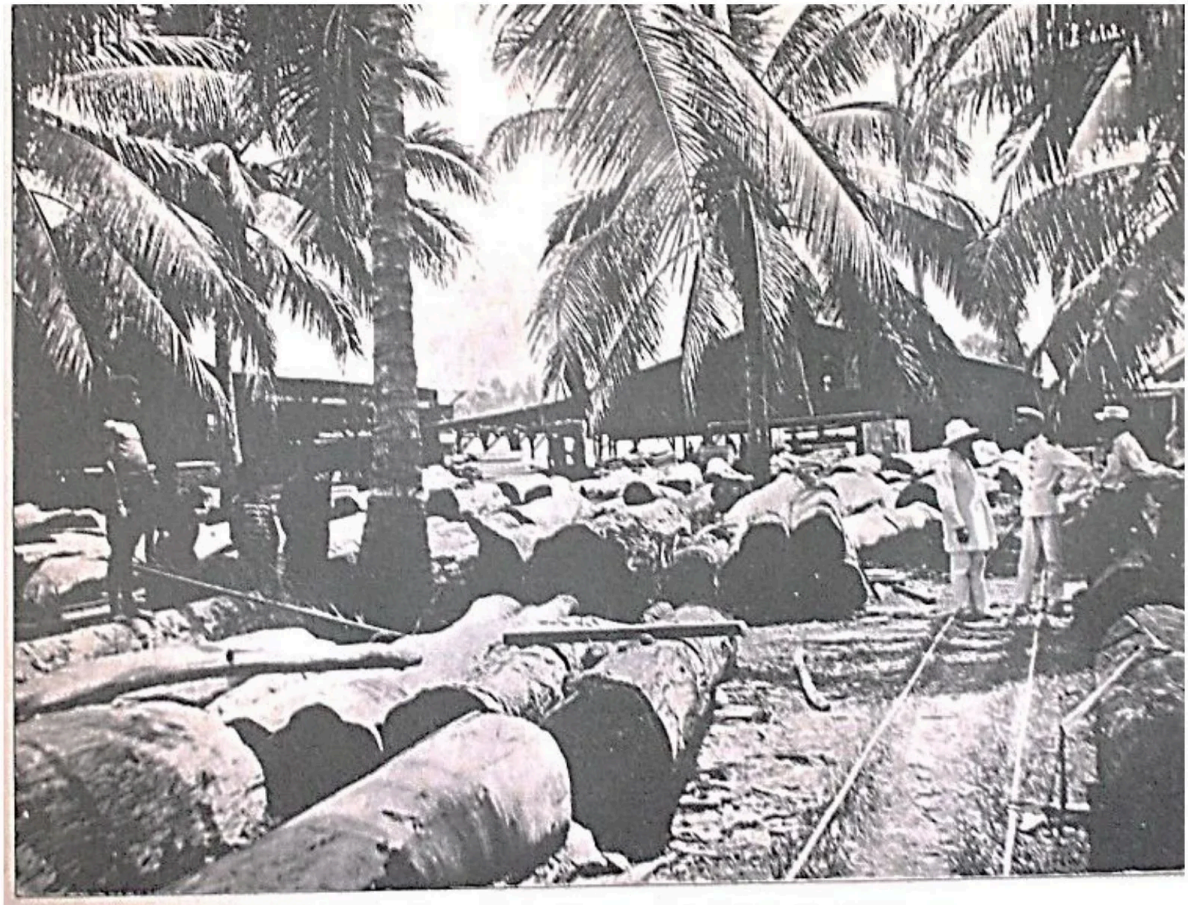


Top - This classic photo depicts a group of SVD missionaries on a flatcar hauled by a donkey tear
crossing a substantial bridge at Alexishafen, c. 1914

Courtesy, Missionaries of St. Michael, German

Bottom - A buffalo-drawn hopper wagon transports material from a construction site a
Alexishafen.

Word - SVD Missio

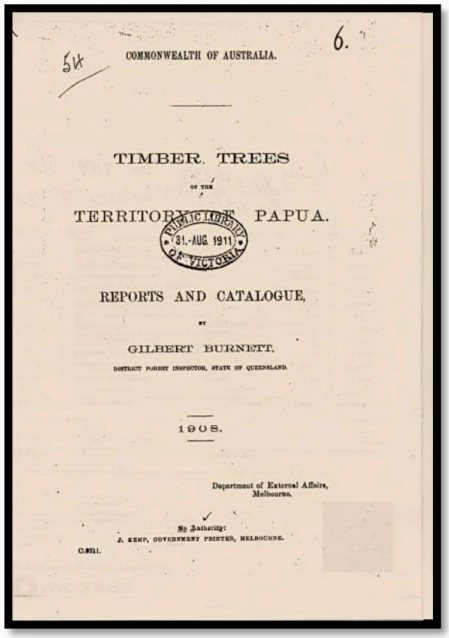


59. Sawmill and timber yard at Alexishafen.

A section of the botanical gardens in Rabaul established during the German administration around 1905. (M. von Hein Collection). Later volcanic eruptions destroyed the gardens.

1908 [18] GILBERT BURNETT.

The Australian administrator of Papua and New Guinea Murray, first attempted to survey the timber potential of parts of Papua in 1908. By arrangement with the Queensland Government, a Queensland Forest Inspector Mr Gilbert Burnett went to Papua to report on its timber resources. He stayed there for seven months and visited various places along the coast from the Purari Delta to Samarai and in the vicinity of Buna Bay to the north-east. Mr Burnet[19] reported he had some difficulty in penetrating into the country, but he produced a report of an optimistic nature, and he listed 120 species of trees by their Papuan names, obtained wood samples and classified them according to use, but not botanically.



COMMONWEALTH OF AUSTRALIA.

6.

TIMBER TREES

OF THE

TERRITORY OF PAPUA.

PUBLIC LIBRARY OF VICTORIA
31 AUG 1911

REPORTS AND CATALOGUE,

BY

GILBERT BURNETT,

DISTRICT FOREST INSPECTOR, STATE OF QUEENSLAND.

1908.

Department of External Affairs, Melbourne.

By Authority:
J. KEMP, GOVERNMENT PRINTER, MELBOURNE.

C.8211.

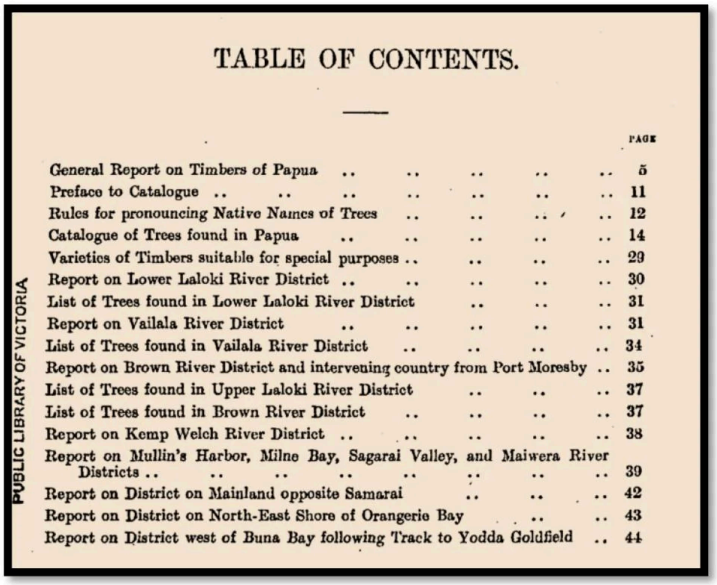


TABLE OF CONTENTS.

PUBLIC LIBRARY OF VICTORIA

	PAGE
General Report on Timbers of Papua	5
Preface to Catalogue	11
Rules for pronouncing Native Names of Trees	12
Catalogue of Trees found in Papua	14
Varieties of Timbers suitable for special purposes	29
Report on Lower Laloki River District	30
List of Trees found in Lower Laloki River District	31
Report on Vailala River District	31
List of Trees found in Vailala River District	34
Report on Brown River District and intervening country from Port Moresby	35
List of Trees found in Upper Laloki River District	37
List of Trees found in Brown River District	37
Report on Kemp Welch River District	38
Report on Mullin's Harbor, Milne Bay, Sagarai Valley, and Maiwera River Districts	39
Report on District on Mainland opposite Samarai	42
Report on District on North-East Shore of Orangerie Bay	43
Report on District west of Buna Bay following Track to Yodda Goldfield	44

[20]The death is announced of Mr. Gilbert Burnett a highly respected resident of Wellington Point.

The late Mr. Burnett was one of the early seekers on the Gympie field when it broke out. In going over the ranges at Conondale they let the dray down by way of a rope made fast to trees.

Later, Mr. Burnett settled at Burpengary, and after a few years he took charge of his father-in law's sugar plantation and mill at Woondall, near Wynnum.

From there he took control of the late Captain Hope's sugar mill at Ormiston, and later he bought the mill and a large tract of land at Wellington Point, where he erected the mill and grew sugar cane.

Subsequently he converted the mill into a sawmill and carried on timber milling for many years.

---

[18] Reference PNGAF Mag # 9B-5 of 21/4/21 p7.

[19] 1908 Gilbert Burnett *Timber Trees of the Territory of Papua Reports and catalogue.* Public Library of Victoria 31 Aug 1911

[20] Transcribed from "the Queenslander Saturday 23rd May 1925.

But misfortune came, the whole mill and contents being burnt down. Mr. Burnett held a position in the Queensland Forestry Department and made many friends' during his travels in all parts of Queensland and New Guinea.

INSPECTION OF THE TIMBER TREES OF THE TERRITORY OF PAPUA.

GENERAL REPORT.

Port Moresby,
25th May, 1908.

SIR,

The time allowed me by the Government of Queensland during which I was intrusted with the task of examining and reporting upon the commercial timber of this Territory having now expired, I have the honour to submit to you my final report preparatory to my return to Queensland.

I have visited eight important centres, separate reports concerning which have been forwarded to you; and but for the difficulties of locomotion I would doubtless have been able to examine others.

I regret not having had the opportunity of going to the Fly and Mambare Rivers. I have been comparatively close to both, but on each occasion circumstances arose which prevented my going to either place. Had I been able to examine the country on one or both of these rivers it is probable I should have found some valuable timber areas on their upper reaches. I was also prevented, through an injury to my leg whilst at Galley Reach, from examining the heavily-timbered country on the Vanapa and Veimauri Rivers and Kanosia Creek.

Difficulties of Locomotion.—A small steam launch would have been of great assistance to me in going up the rivers I have visited, and for want of this I have not been able, by reason of the strong currents prevailing, to reach a point distant more than 30 or 40 miles from the mouth of any of them.

Wet Season.—Of course I have been here during the whole of the wet season. Had it not been so the currents would not have been so strong, and I probably would have been able to get much higher up. But had it been otherwise a fresh difficulty would have presented itself, namely, that of entering some of the western rivers during the south-east season which, I understand, is very difficult and dangerous.

Notwithstanding these unavoidable hindrances, I have seen sufficient of the timber resources of the Territory to warrant all I have stated in my interim reports, and had I been able to get over more of the country I am convinced that my reports concerning it would be in the same laudatory strain.

Timber on High Lands.—I have invariably found the best timber on the higher lands, and although I have met with immense areas of valuable timber on the low-lying country which fringes the coast-line

of the Territory, I believe that in years to come, when the present available supply is becoming exhausted, an even better class of timber will be found on the ridgy country which leads up to the high mountain ranges. I have been informed by two or three people who have been there that very large pine trees are growing well up in the Owen Stanley Range, at an altitude of three of four thousand feet. These are likely to remain there for many years to come.

Characteristics of the Timber generally.—The noticeable characteristics of the Papuan timbers are the comparative lightness, toughness, and tallness of the trees, and consequent upon this latter condition, smallness of diameter, the result of an abundant rainfall throughout the year, combined with great heat. And, as an additional result, the wood generally is not so hard and dense as that grown in more temperate climates. It may therefore be presumed that the timber growing on the ranges will be harder and heavier than that on the low-lying country. Excepting some of the softwoods, such as Ilimo, which often attains a diameter of 5 or 6 feet and up to 60 feet in length, the diameter of the trees generally does not exceed 30 inches.

Variety of Species and Distribution.—The variety of species is very large in Papua. In the catalogue I have prepared there are more than 120 varieties, and there are probably as many more, of which, for want of time, I was unable to obtain names and specimens.

The names of the varieties catalogued are sure to be perplexing for a time, until one becomes acquainted with them. But as a large number bear a strong similarity to each other I predict that only the names of the choicest will be recognised, while the others will be distinguished only as "hardwoods" or "softwoods." No variety is found in large groups like pine in Queensland, and the quantity contained on a given area is not, as a rule, large, say, two or three thousand feet per acre. It is therefore obvious that all the useful, matured timber must be cut to a face, without regard to variety.

Transport of Logs to Mill.—Fortunately a large proportion of the timber-bearing areas through which I have been, is adjacent to important rivers, such as the Vailala, Brown, Laloki, Kemp Welch, Jones, Sagarai, and Maiwera.

It is difficult to say definitely what are the best means of transport from the forest to the mill or to navigable waters in a new country like this. It is better determined by practical tests.

Bullocks are undoubtedly very handy in hauling log timber, but I am doubtful whether they could be used satisfactorily here in consequence of the area of grass land being extremely limited. It would not be possible to work them unless areas of scrub were cleared upon which they could graze after the grass had grown up. This of course would be costly, seeing the area that would be needed to keep a large number of working bullocks.

For similar reasons the use of mules and horses might be objectionable unless hand-fed with maize grown on the spot. And when it is considered that maize is so easily and cheaply grown here, the idea of carrying on the haulage by the aid of mules or horses seems a feasible one.

When a large area of timber is to be operated upon, I am of opinion that light tramways, such as are used on the sugar plantations in Queensland, with temporary branches at intervals, which could be easily moved further on as the timber is cut out, will give the best results.

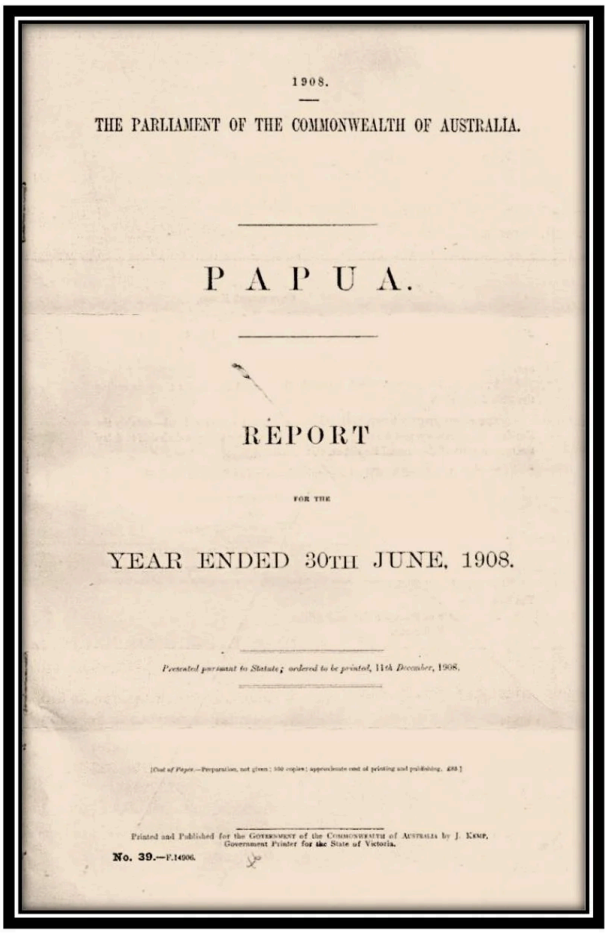
Export.—I am of opinion that any one having leased an area of timber country would erect one or more saw-mills (according to the extent of the area), and cut the timber into fairly large flitches for export, rather than send it away in the log. The waste in cutting, pipes, and other defects, representing quite 20 per cent., would thus be saved in freight, and when sawn it can be closer and better stowed in the ship's hold.

Seasons.—The wet season is during the north-west monsoon—from November to March—and south-east trade winds prevail from April to October.

I forward herewith the catalogue before referred to, of some of the timbers of commercial value in Papua. A specimen of each variety mentioned therein I have labelled and placed in the Economic Museum at Port Moresby.

I have the honour to be, Sir,
Your obedient servant,
(Signed) GILBERT BURNETT,
District Forest Inspector,
State of Queensland.

The Hon. the Commissioner for Lands,
Port Moresby.



1908.

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA.

PAPUA.

REPORT

FOR THE

YEAR ENDED 30TH JUNE, 1908.

Presented pursuant to Statute; ordered to be printed, 11th December, 1908.

[Cost of Paper.—Preparation, not given; 100 copies; approximate cost of printing and publishing, £60.]

Printed and Published for the GOVERNMENT of the COMMONWEALTH of AUSTRALIA by J. KEMP, Government Printer for the State of Victoria.

No. 39.—F.14606.

21

Page 51 of the Annual Report Gulf Division 1/7/1908, the Resident Magistrate Kerema, reports on lands and timbers including the illegal cutting of cedar and Gilbert Burnett's visit.

Very little land is situated near the Coast. What there is now is fully occupied by the natives with their gardens. Beyond that and behind that extends a sago belt the whole length of the coastline.

During the year, a trip was made up the Vailala River with Mr Burnett, who had come over from Queensland for this government specifically to look into the timbers.

It is much to be regretted that in the past many thousands of feet of valuable cedar had been cut and allowed to float out to sea. The result is that the Vailala River has now no cedar of any extent within a considerable distance of its mouth.

I fancy the main difficulty will be in transporting the logs from where they are cut to the river and a light line of rails laid on sleepers made of the saplings with which the scrubs are full, might be of value.

From what one hears from the natives, it would appear that the heavier timber will be found on the Purari River. There is a considerable quantity of cedar up this river, and as it has never been touched, is likely to be more easily got at.

I have cut cedar trees close to Kerema, growing almost in the company of mangroves and with total streams quite close to them.

[21] Page 1 nia.obj-15829293502 National Library of Australia

1911 JAMES MANN[22]

In 1911, James Mann[23] (1857-1921), presented a paper of his work on six Papuan timber species titled [24]*Papuan timbers - some of the properties of six specimens, by James Mann, 1911*.

[Proc. Roy. Soc. Victoria, 24 (N.S.), Pt. I., 1911.]

ART. II.—*Papuan Timbers.*

SOME OF THE PROPERTIES OF SIX SPECIES.

BY JAMES MANN.

(Government Research Scholar, Engineering School, University of Melbourne.)

(With Plates X.–XX.).

[Read 9th March, 1911].

Introduction.

The investigation of the timber resources of Papua was placed in the hands of Mr. Gilbert Burnett, District Forest Inspector of the State of Queensland, by the Commonwealth Government of Australia, in the year 1908. He reported on 123 species after visiting eight important districts. His report was printed by the Government printer and issued by the Department of External Affairs, Melbourne.

In his report he says:—"The names of the different varieties are such as have been supplied to me by those of the natives of the various localities who appeared to possess the largest amount of knowledge of the native woods; and the greatest care has been exercised in noting them correctly."[1]

Under these conditions, it is highly probable that some confusion may exist, as several names are given to the one variety of tree, these being the names given by the most intelligent natives in the several districts in which the trees grow. Thus, if there are twenty districts, there may be twenty different native names. In a territory such as Papua, where there is no written language and a great number of dialects, it may be necessary to record all names, but if the meaning of each of these words were ascertained and that meaning described the particular genus, some such colloquial name might be adopted.

1 Timber Trees of the Territory of Papua: Reports and Catalogue. By Gilbert Burnett.

[22] Reference PNGAF Mag # 9A of 15/3/21 p20.

James Mann was a leading researcher and authority on determining the strength and durability of Australasian timbers, and pioneered methods for identifying species using microscopic examination, and splinter tests. Mann was Government research scholar at the School of Engineering, University of Melbourne, 1910-1912, and oversaw the Engineering Laboratory, for 20 years when Professor W. C. Kernot occupied the chair of engineering.

James Mann wrote several papers in conjunction with the Victorian Institute of Engineers, the Royal Society of Victoria, and other technical bodies, and was consulted by the Victorian Forests Department after it was formed in 1908.

He published a textbook *Australian Timber: its strength, durability, and identification*, 1900. An extended second edition was published in 1921, that included more detailed research based on test samples with known age, forest location, and soil conditions, as well as including details about imported timber species from Papua, Burma, New Guinea, and New Zealand.

Source

Flagstaff Hill Maritime Museum and Village

Author James Mann

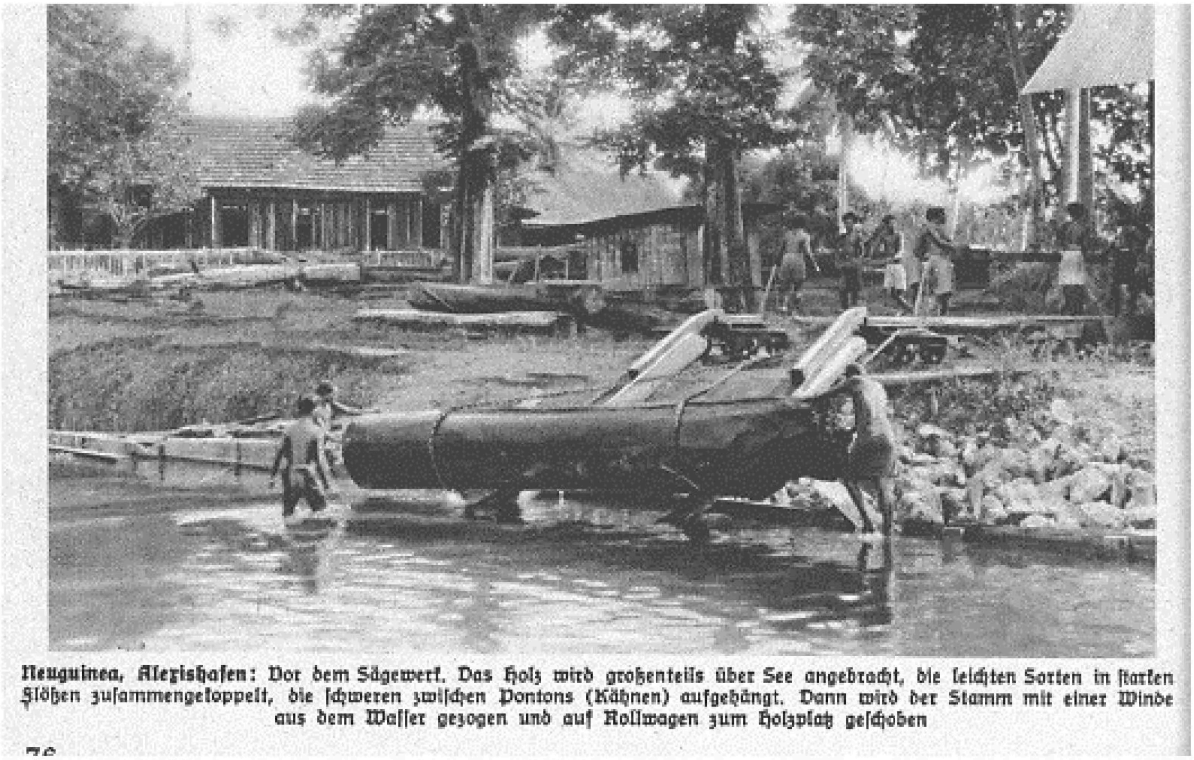
Publisher Walker may & Co 1900.

[23] Entry in Encyclopedia of Australian Science

[24] https://www.biodiversitylibrary.org/itemdetails/33805 Vol 24 of 1912 pages 20-45

1913 MARIENBERG SAWMILL AND RAILWAY[25]

SVD missionaries established a station at Marienberg on the lower Sepik River in 1913.



Neuguinea, Alexishafen: Vor dem Sägewerk. Das Holz wird großenteils über See angebracht, die leichten Sorten in starken Flößen zusammengekoppelt, die schweren zwischen Pontons (Kähnen) aufgehängt. Dann wird der Stamm mit einer Winde aus dem Wasser gezogen und auf Rollwagen zum Holzplatz geschoben

Another SVD photo, caption German. M Pearson.

Lifting a log from a raft on the Sepik River. Source Fryer Collection.

[25] *End of the Line* - A History of Railways in Papua New Guinea Bob McKillop & Michael Pearson UPNG Press 1997

Log on rail truck. Source Office of Information and Extension Services, National Library and Archives at Waigani.

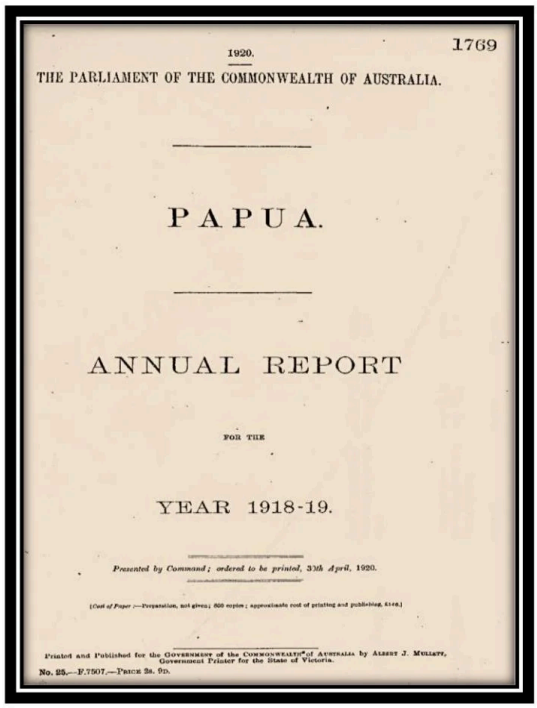
Log yard. Source National Archives Waigani.

Log yard. Source National Archives Waigani.

Drying sheds. Log yard. Source National Archives Waigani.

1920. Lack of Wood Preservation Treatments[26].

Throughout PNG's history, there were no long-standing timber structures. This was because the sapwood of all PNG timbers and the heartwood of some PNG timbers are liable to attack by wood destroying fungi, boring insects, and termites. In addition, all untreated timber placed in saltwater is liable to attack by a variety of organisms collectively known as marine borers. There was an enormous need to develop wood preservation methods for PNG timbers.



1920. 1769

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA.

PAPUA.

ANNUAL REPORT

FOR THE

YEAR 1918-19.

Presented by Command; ordered to be printed, 30th April, 1920.

(Cost of Paper:—Preparation, not given; 800 copies; approximate cost of printing and publishing, £148.)

Printed and Published for the GOVERNMENT of the COMMONWEALTH of AUSTRALIA by ALBERT J. MULLETT, Government Printer for the State of Victoria.

No. 25.—F.7507.—PRICE 2s. 9d.

Back in 1920, the problems of a lack of timber preservation treatment were highlighted in the 1918-19 PAPUA Annual Report.[27] Extract.

The staff consisted of the Acting Director, Superintendent, Road Engineer, Draughtsman, Acting Accountant, and a temporary Clerk for part of the year, together with a storeman and two or three overseers for varying periods. The Superintendent--Mr. J. MacDonald-returned from vacation leave on the 21st of October 1918. Mr. G. M. Turnbull draughtsman, acted in Mr. MacDonald's place during the latter's absence, and Mr. Turnbull went on six months' leave on the 23rd of August 1918, returning on 4th March 1919.

With regard to the office staff, I have had to be content with an acting accountant, who had no assistance during the greater part of the year, the result being that much of the work got seriously behind and any attempt at keeping correct records and costs of work had to be almost abandoned. I also had to manage with a shortage in the mechanical staff, both these difficulties being due to the reluctance of the Government to fill positions which might at any day be made available to officers returning from the Front. When all the returned men who can reasonably claim positions have been absorbed, it will still remain necessary to find more men for the mechanical staff, as a large amount of maintenance work, which in normal times would be regarded as absolutely essential, has been permitted to stand over, partly owing to the shortage of men, but mainly due to the high cost of materials and the scarcity of shipping.

However, the new position will have to be faced, as the general opinion throughout the world appears to be that the tendency during the next few years will be for the cost of both material and labour to increase. For the reasons already stated, the majority of our buildings are falling into a dangerous state of disrepair, so much so that if they are not attended to very soon, they will not be worth repairing. These remarks apply to the buildings at Moresby and Samarai, but much more so to those on outstations, where, in addition to the shortage of labour and the high cost of materials, I have had to contend with the very serious shortage of

[26] REF: PNGAF Mag # 9A of 15/3/71 p22

[27] Extract of W R Smith's Acting Director of Public Works, Public Works Department. Annual Report for the year ended 30th June 1919 (pages 67 to 70

local shipping, with the result that an inspecting officer would be occupied for months in going the rounds of all the stations to ascertain what is required.

Owing to the very high cost of Australian timbers, and the increased freights charged by the small amount of shipping available, I have endeavoured to get along with timbers supplied by the local sawmills, but the results are very far from satisfactory. The timbers being cut from immature logs and badly milled as well, the result being that a perfectly straight stick is quite an exception, thus involving considerably more labour in the construction of a building than would be necessary when using properly milled timber. I am, therefore, going into the question as to whether it would not pay better to obtain Australian timbers, even at the enhanced prices prevailing.

This all leads to the question as to whether it is any longer the best policy to erect wooden buildings, which are all open to the dangers of being attacked by white ants, woodborers, dry rot, and all the other disabilities to which timber is subject in the tropics.

I am seriously considering the question of erecting all future permanent buildings with concrete walls.

At the present time, Government offices are scattered all over the town. They are all timber structures, some of them having been erected more than twenty years ago and are now quite inadequate in size to provide for the increasing staff. A proposal to construct one building to contain the whole of the Administrative staff has been discussed, and should this idea be carried out, it would become a great convenience to both the public and the Government staff. At present, much time is lost in getting from one Department to another.

New Wharf -As mentioned in my previous annual report, work was suspended in November 1917, pending arrangements being made to obtain expert advice from Australia as to whether the work was being carried out on the best lines. A report was obtained from Mr. Mann on the preservation of timbers in tropical sea waters, and Mr. Hall, of Brisbane, also visited Port Moresby, and made an inspection and report. Subsequently it was arranged that before proceeding further with the work, the advice of Mr. T. Hill, of the Commonwealth Works and Railways Department, should be obtained, but Mr. Hill was apparently never able to visit the Territory, and therefore nothing has been done with the exception of fixing some bollards and fenders. Arrangements are in hand for the erection of a cargo shed, 140 feet by 30 feet, on the shore end of the wharf, and this work will be put in hand immediately, thus very much relieving the congestion which has recently existed.

Complaints have been received for a long time from residents at Samarai regarding the inadequacy of wharf and shed accommodation at that port, and as the existing wharf is getting into a state which is almost beyond repair, the question is under consideration as .to whether funds should be made available to grant the facilities demanded.

The question of better hospital accommodation for natives, both at Samarai and Port Moresby, has been much discussed, and preliminary schemes have been worked out, but the matter is now .in abeyance pending the return of Dr. Buchanan, C.M.O. and Dr. Giblin, G.M.O., Samarai, from active service.

About 3 acres of land have been reclaimed from low-lying ground at Samarai, ·and arrangements are now in hand to segregate the gaol accommodation, police barracks and native hospitals on this area. The main gaol, head gaoler's cottage, warders' quarters, kitchen, and latrines have already been erected.

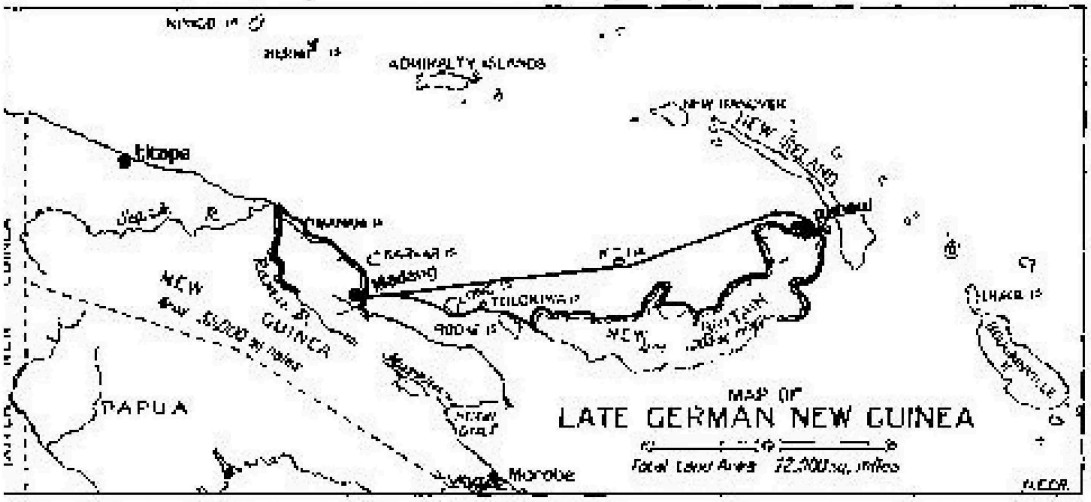
With regard to the road from Port Moresby to Sapphire Creek, a large copper mine is in course of development at the end of this, and the company is using heavy traction -engines, weighing up to 13 tons, for the transport of their ore to Port Moresby. As it was recognised, both by the Government and the company, that this could only be regarded as extraordinary traffic, an arrangement was come to under which the company undertook to maintain the road during those months of the dry season when they are using it. The company has put in several deviations to reduce curvature and grades, which was done entirely for their own convenience, but is certainly an advantage to the public. I regard the result of the arrangement as entirely satisfactory from both the Government and the public point of view. Arrangements were made to construct a road from the coast at Kapa-Kapa to the Kemp-Welch River, a distance of about 17 miles, to serve some plantations there. About half of this length has been constructed sufficiently well to carry wheeled traffic in the dry season, but a large expenditure in metalling, bridges and culverts will be necessary, to make the road fit to carry wheeled traffic throughout the year. I do not consider that the traffic at present in sight justifies this expenditure.

On the high country in the Sogeri District there is some excellent rubber land, where several thousand acres are in bearing, and difficulties of transport are generally recognised as a serious handicap. The Government has recognised for a long time that these difficulties should be remedied, but the mountainous nature of country offers many obstacles to road construction. I have always advised that thorough survey should be made to ensure the best location before any money is expended on construction. This, of course, takes time, but the surveys have now been completed, and I am convinced that the route now pegged is in the correct place though it is not all easy going. A start is to be made immediately on the construction of a good mule track along this route, which can eventually be improved to carry vehicular traffic. Even this, although only a mule track, will be a great boon to the planters, as the existing track contains many almost impossible grades.

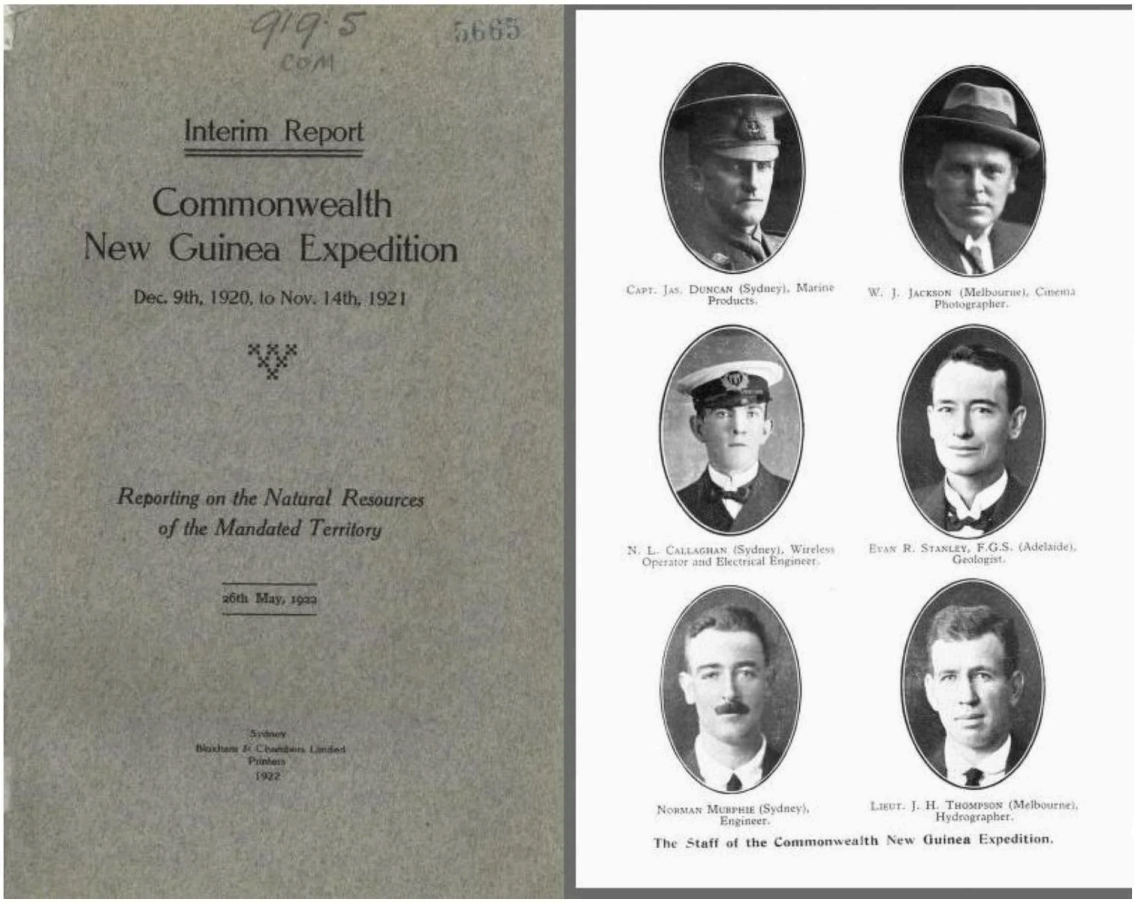
The water supply of Port Moresby is provided by a corrugated iron catchment, about two-thirds of an acre in extent and a reservoir capable of holding 500,000 gallons of water. The water is distributed through the town by a 4-inch 'main, with standpipes 300 or 400 feet apart. The Department delivers water into tanks at the various tenements at a charge of l0s. per 1,000 gallons. With this very limited supply we could not dare to reticulate each household, as we would very soon find ourselves without water even with all the care exercised, we are sometimes on the verge of finding the reservoir entirely exhausted, and it is probable that eventually some better arrangement will have to be made. At a distance of about 20 miles from Port Moresby we have the Rouna Falls, on the Laloki River, at an elevation of some 1 400 feet above sea level, with a flow which would be sufficient to provide a water supply for a city with a of many thousands. It is my intention to go into this question in the near future and submit a proposition and estimate of cost.

1920/21 Commonwealth New Guinea Expedition.[28]

In 1918 the Department of Home and Territories tried unsuccessfully to engage an experienced tropical forester from the Philippines or to borrow one from India with the wider brief *to inspect the timber resources … and report … the best means of conserving and developing these resources*. In 1920/21 the Commonwealth Government commissioned the Commonwealth New Guinea Expedition who presented an interim report titled *Reporting on the Natural Resources of the Mandated Territory. May 1922.*



The heavy line indicates the area of investigation of Expedition, and route taken by the Warrie.



Capt. Jas. Duncan (Sydney), Marine Products.
W. J. Jackson (Melbourne), Cinema Photographer.
N. L. Callaghan (Sydney), Wireless Operator and Electrical Engineer.
Evan R. Stanley, F.G.S. (Adelaide), Geologist.
Norman Murphie (Sydney), Engineer.
Lieut. J. H. Thompson (Melbourne), Hydrographer.
The Staff of the Commonwealth New Guinea Expedition.

[28] **Ref: PNGAF Mag # 9B-5 of 21/4/21 p 8. Ref PNGAF Mag # 9A of 15/3/21 p 37**

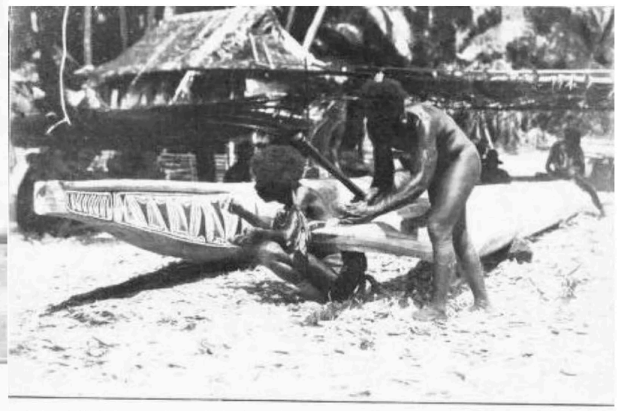
Page 8 Interim Report Commonwealth New Guinea Expedition 9/12/20-14/11/21. During the military occupation of the Territory, no organised effort was made to ascertain its actual and potential resources. Casual reports occasionally came through from the Administrator to the minister of defence and were based for the most part on observations by police masters, deputy district officers etc. or sometimes through the Rabaul Lands department. Just before the introduction of the New Guinea Bill, the Prime Minister decided that an expedition suitably equipped for the purpose be sent to New Guinea. The writer had a conference with him, and the Minister of Defence and the Expedition was outlined in several official memorandum submitted to and approved by Mr Hughes.

General instructions were that the expedition should not cost more than 10,000 pounds and should not be absent for more than a year, be under the sole control of the Prime Minister's department and a roving commission within the Territory.

The main purpose of the Expedition was to conduct investigations regarding natural resources along every possible avenue which would yield reliable information helpful to the Federal Government. The Territory had a land area of 72,000 square miles and it was not part of the objects of the expedition to attempt to explore such an area. The main object in making a voyage was to gain information at first hand relating to general questions such as land, manpower, trading, recruiting, waterways and power, anchorages etc. and to visit the more remote and little-known parts away from the shipping routes and in uncharted waters. During its currency, provision was made for conducting the customary observations of a scientific expedition such as meteorological work, mapping rivers, reefs, mountains, measuring potential power of waterfalls, determining latitudes and longitudes, measuring altitudes, taking soundings, recording natural phenomena such as earthquakes, geysers etc.

A boat was purposefully built called *The Wattle.*

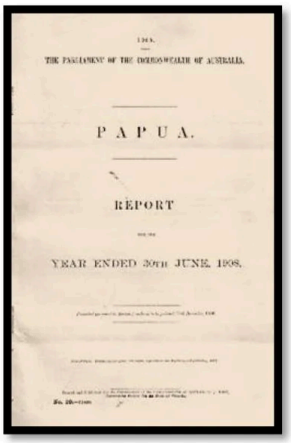
The *Wattle*, the ship used by the Expedition, was built specially for the work.



Canoe Builders at Kalinge, New Britain. Their canoes are famous all over New Britain for fine workmanship, and they trade them to other tribes for commodities they are in lack of.

Commonwealth New Guinea Expedition 9/12/20-14/11/21. Photo credit National Library Canberra.

NEED FOR CORRECT INSTITUTIONAL FRAMEWORK FOR FOREST MANAGEMENT



PAPUA.

REPORT

YEAR ENDED 30TH JUNE, 1908.

Early attempts to institute forest management legal frameworks are highlighted in the Papua Annual Report of 1908.

ANNUAL REPORT FOR THE YEAR ENDED 30TH JUNE, 1908.

LEGISLATION.

The following Ordinances were passed during the year:—

No. VIII. of 1907.—Appropriation Ordinance 1907–8.
No. IX. of 1907.—Supplementary Appropriation Ordinance 1904–5.
No. X. of 1907.—Supplementary Appropriation Ordinance 1905–6.
No. XI. of 1907.—Removal of Natives Ordinance of 1907.
No. XII. of 1907.—Constabulary Ordinance of 1907.
No. XIII. of 1907.—Native Children Custody and Reformation Ordinance of 1907.
No. XIV. of 1907.—Sandalwood and Rubber Ordinance of 1907.
No. XV. of 1907.—Animals Restriction Ordinance of 1907.
No. I. of 1908.—Timber Ordinance of 1907.
No. II. of 1908.—Immigration Restriction Ordinance of 1907.
No. III. of 1908.—Port Dues Revision Ordinance of 1907.
No. IV. of 1908.—Mining Ordinance of 1907.
No. V. of 1908.—Constabulary Ordinance of 1908.

Timber Ordinance of 1907 Annual Report Papua 1908 page 5.

Annual Report Papua 1908 Page 6.

Ordinance No. XIV. of 1907 (Sandalwood and Rubber Ordinance) repeals No. VI. of 1907, and re-enacts it with a few alterations. The provision that "No licence shall, without the consent of the Lieutenant-Governor in Council, be issued to any person who is not of European descent" is omitted; a licence may be issued for six months; and servants of a licensee need not have a licence. It is also enacted that no person shall have an absolute right to a licence, and that a magistrate may refuse a licence without assigning a reason.

The Animals Restriction Ordinance (No. XV. of 1907) prohibits the introduction of certain animals (rabbits, foxes, hares, and monkeys) absolutely; provides that none but domestic animals may be introduced without the written consent of the Lieutenant-Governor, and gives power to the Lieutenant-Governor by proclamation to prohibit the introduction of any other animals, either altogether or from certain places. The penalty provided is a fine of £500, or six months' imprisonment.

The Timber Ordinance of 1907 (No. I. of 1908) was passed in view of the interest which was being taken in the timbers of the Territory. Timber Reserves may be proclaimed and licences granted conferring the exclusive right to cut timber in the area to which the licence applies. The maximum area is 75,000 acres, and the longest term for which the licence can be granted is 25 years; the shortest term is one year. Rent is to be paid half-yearly in advance at the rate of £1 for every 100 acres. A royalty is also payable on the quantity of timber felled; the amount of the royalty may be fixed by regulation, but it is not to exceed 7s. 6d. per 1,000 superficial feet. The licensee must also, within one year or such longer time as the Lieutenant-Governor may fix, erect a saw-mill of power proportional to the area; the proportion is to be fixed by regulation.

Leases under the Land Ordinance of 1906 may be granted of land proclaimed as a timber reserve or of land under a timber licence, subject in each case to conditions necessary for the protection of the timber and the rights of the licensee. Only Crown land can be proclaimed as a Timber Reserve; the relations between timber getters and the natives are left subject to the legislative conditions which existed before this Ordinance was passed. Timber rights may be acquired by the Government by purchase from the natives.

Annual Report Papua 1908 Page 8 Timber Licences.

Timber licences are proclaimed by the *Gazette* of 27th May on both banks of the Brown River for a depth of 6 miles from both banks, and on the right bank of the Aroa River for a depth of 10 miles. Both these rivers are in the Central Division.

Regulations under the Timber Ordinance of 1907 are published in the *Gazette* of 3rd June, as follows :—

The frontage of land under a Timber Licence shall not exceed four times its depth.

A royalty of 7s. 6d. is to be paid on every 1,000 superficial feet of cedar, and a royalty of 2s. 6d. on every 1,000 superficial feet of timber other than cedar. In the event of timber being shipped or disposed of in the log, a reduction of one-fifth will be allowed in measuring the number of superficial feet.

Saw-milling plants are to be erected as under :—

(1) For an area of 75,000 acres a plant capable of turning out 200,000 superficial feet of sawn timber per month.
(2) For an area of 40,000 acres a plant capable of turning out 100,000 superficial feet per month.
(3) For an area of 20,000 acres a plant capable of turning out 60,000 superficial feet per month.
(4) For an area of 10,000 acres a plant capable of turning out 30,000 superficial feet per month.

Timber Licenses 1918-1919 Papua Page 72.

The following table shows the timber licenses at present held in the Territory :—

Locality.	Area.	Annual Licence Fee.	Term of Licence. 25 years from—
	Acres.	£ s. d.	
Vanapa River	18,240	91 10 0	14th November, 1910
Vanapa River	2,500	12 10 0	14th November, 1910
Portion 183, Galley Reach	1,950	10 0 0	6th November, 1912
Portion 184, Galley Reach	3,885	19 10 0	28th October, 1912
Rorona Creek, Galley Reach	4,000	20 0 0	2nd December, 1913
Buna Bay	10,000	50 0 0	23rd November, 1916
Buna Bay	10,000	50 0 0	28th February, 1918
Buna Bay	30,000	150 0 0	28th February, 1918
Goldie River	1,000	5 0 0	20th May, 1918
Brown and Laloki Rivers	4,480	22 10 0	1st July, 1918
Laloki and Goldie Rivers	400	2 0 0	2nd April, 1919
	86,455	433 0 0	

Annual Report to the UN re the Administration of New Guinea 1/7/1933 to 30/6/1934 p 96.

Timber.

Legislation. § 301. The legislation relating to timber was not altered during the year.

Timber licences. § 302. The following areas were held under timber licences at 30th June, 1934 :—

Licensee.	Area in Hectares.	Locality.
Catholic Mission of the Most Sacred Heart of Jesus	2,000	Ulamon, North Coast, New Britain
C. G. Francis	400	Amgan River, Gasmata, New Britain
Total	2,400	

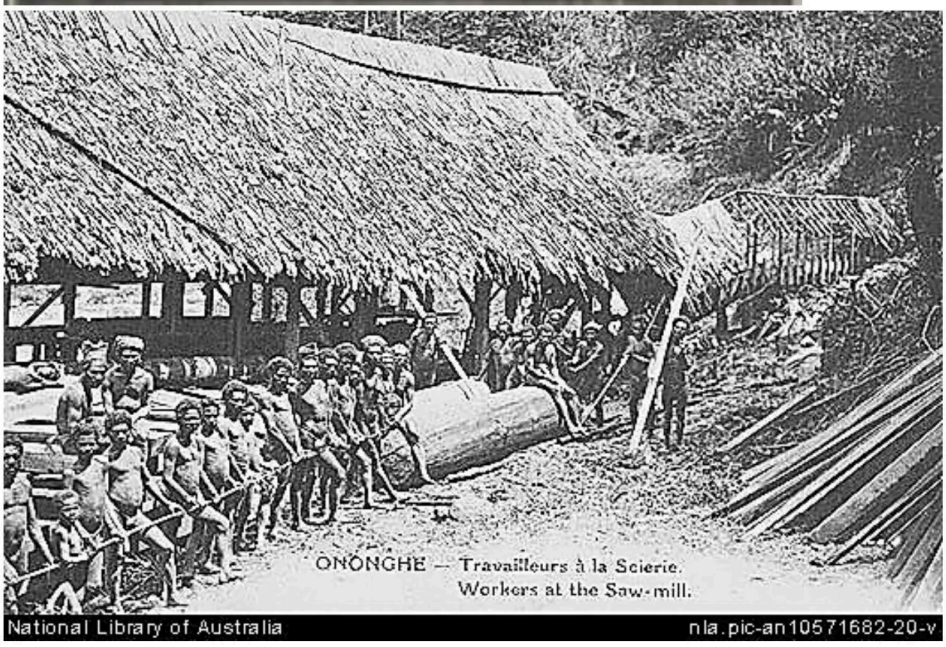
Timber permits. § 303. Seven timber permits were issued during the year.

Saw-mills. § 304. The sawmills operating in the Territory, including plants on the gold-fields, milled approximately 2,300,000 superficial feet of timber.

Sawmills

1921 Aropokina Sawmill CM Sawmill

Photo credit National Library of Australia. Photographer Frank Hurley.



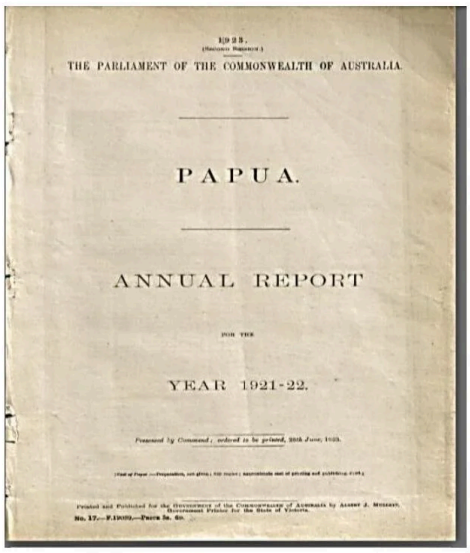
Source National Library of Australia.

1920 -1925 LANE POOLE'S ASSESSMENT OF TPNG'S FOREST RESOURCES

Requests for Lane Poole's Surveys[29]

Parts of the Australian timber industry became worried about their supplies when New Zealand had banned exports of its white pine (*Podocarpus dacrydioides*) and kauri (*Agathis australis*) that were used for butter boxes, while at the same time supplies of Australian kauri (*Agathis robusta*) and hoop pine (*Araucaria cunninghamii*) were diminishing. In 1920 a Melbourne timber agent, Victor Trapp, arranged for one of the timber companies to investigate the possibilities of obtaining case, match and plywood material from Papua. Nothing came of the industry investigation, but when Trapp learnt of Lane Poole's resignation from Western Australia, he suggested that the Commonwealth should secure his services.[14] With no other job in sight, Lane Poole accepted a 12-month appointment that was later extended by 6 months. For New Guinea, W. M. Hughes, in one of his more erratic actions as Prime Minister, supported an ineffective private scientific expedition at about the same time. This took with it a forest inspector from Queensland, F. W. Hayes, who fell ill, and it was left to the geologist, Evan Stanley, to write the report, including a few notes on timber. The new administration knew little else about New Guinea's forests, but when it heard that two companies were being formed to exploit their timber, it asked Lane Poole to continue his Papuan survey for a further year in New Guinea.

1921/1922 Lane Poole Arrives


1923.

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA.

PAPUA.

ANNUAL REPORT

FOR THE

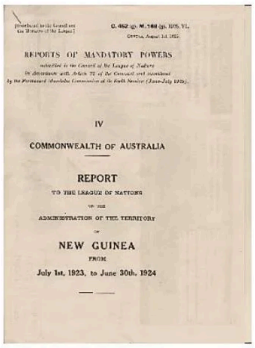
YEAR 1921-22.

Forestry page 81 of Annual Report Papua 1921-22.
Very little had been done during the year in commercially exploiting the timber resources of the Territory. A great proportion of the timber licenses have been cancelled during the period under review. The only licences at present in existence are five held by the New Guinea Copper Mines aggregating 17,340 acres (one on Woodlark Island of 12,000 acres, and one on the mainland near Samarai of 2,600 acres.

Mr C E Lane Poole, a forester of long experience in various parts of Africa and in Western Australia and possessing very high credentials was engaged for twelve months from 16th March 1922 to report generally upon the timber resources of the Territory. Mr Lane Poole arrived on 9th April 1922 and up to present has only been able to inspect the country around Galley reach in the Central Division. No detailed report has as yet been received but generally speaking, his views regarding the timber resources of that locality are not very favourable

[29] From exploitation to science: Lane Poole's forest surveys of Papua and New Guinea, 1922–1924. Historical Records of Australian Science 17: 71–90. by John Dargavel School of Resources, Environment and Society, Australian National University, Canberra, ACT 2000, Australia. Email: john.dargavel@anu.edu.au

1923/24



REPORTS OF MANDATORY POWERS

IV

COMMONWEALTH OF AUSTRALIA

REPORT

TO THE LEAGUE OF NATIONS

ADMINISTRATION OF THE TERRITORY

OF

NEW GUINEA

FROM

July 1st, 1923, to June 30th, 1924

Forestry page 37 (Report to the League of Nations on New Guinea 1923 to 1924). *The investigation and classification of the timber resources of the Territory were commenced during the year, the work being entrusted to Mr C E Lane Poole a forestry expert, who had just previously completed a similar task in the neighbouring Territory of Papua*

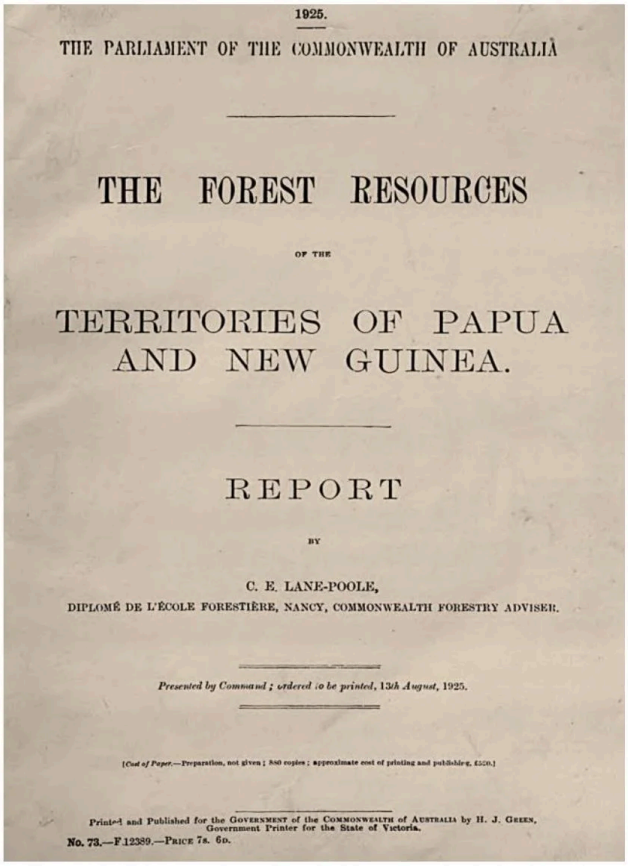
In 1924 the Commonwealth Government took a positive step towards involvement in forestry by the appointment of Lane Poole as its Forestry adviser.

Charles Lane Poole at Madang, 1924, showing the remains of a radio damaged in the raid at Kohu. Note his gaunt appearance after the rigours of his expedition to Mt Otto. Source: C. E. Lane Poole, Forest Resources (1925), courtesy of the National Archives of Australia

In 1925, Lane Poole presented his Report *Forest Resources of the Territories of Papua and New Guinea,* to Federal Parliament.

[30]Don McIntosh recalls during the 1950's another activity was the reconnaissance assessment of the coastal forest of Open Bay which had been logged for walnut some 20 years previously. The survey, to assess the log export potential of the forest, was done under the watchful eye of Lane-Poole. Lane Poole first came to Papua New Guinea in 1922 and produced, after a lot of field work, the first document on the forest resources of Papua New Guinea. He was a small tough old chap with a hook arm who must have been in his late 60's when he went on the Open Bay survey.

[30] Reference PNGAF Mag # 9B-5B4M2 of 27th July 2021 Eminent TPNG forester Don McIntosh.



1925.

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

THE FOREST RESOURCES

OF THE

TERRITORIES OF PAPUA AND NEW GUINEA.

REPORT

BY

C. E. LANE-POOLE,

DIPLOMÉ DE L'ÉCOLE FORESTIÈRE, NANCY, COMMONWEALTH FORESTRY ADVISER.

Presented by Command; ordered to be printed, 13th August, 1925.

[*Cost of Paper.*—Preparation, not given; 800 copies; approximate cost of printing and publishing, £520.]

Printed and Published for the GOVERNMENT of the COMMONWEALTH of AUSTRALIA by H. J. GREEN, Government Printer for the State of Victoria.

No. 73.—F.12389.—PRICE 7s. 6d.

1923-1925. Lane Poole Forest resources Report [31] [32] **In 1925,** Lane Poole presented his Report *Forest Resources of the Territories of Papua and New Guinea* to Federal Parliament. In 1923 and 1924, Charles Lane Poole completed a survey of Papua and New Guinea and recommended the establishment of a forest service.

.

.

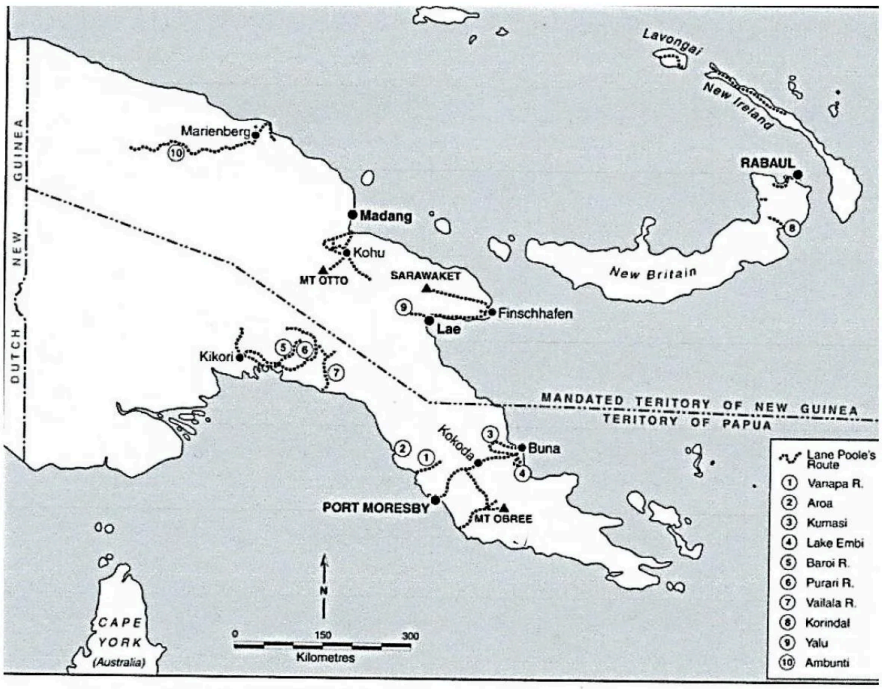


Figure 1. Lane Poole's journeys in Papua and New Guinea, 1922–1924. Map: Clive Hilliker.

[31] Ref: PNGAF Mag # 9B-5 of 21/4/21 p 9. Ref PNGAF Mag # 9A of 15/3/21 p37

[32] Cover page C E Lane Poole 1925 Report on *Forest Resources of the Territories of Papua and New Guinea* Government Printer Melbourne 209 pp

In Dargavel's review of Lane Poole's survey [33] **a** major problem for Lane Poole was to determine the species of each tree, given that there were 50–60 different species at each site and about 400 overall. However, people with an intimate knowledge of the trees of a particular area can name them from the look of their leaves, bark, trunks, crowns, and many small details. Lane Poole found that 'The bush native has a wonderful knowledge of his trees.' He used their skill in identifying each species to record them consistently across each site. For each new species he encountered, he collected specimens of the bark, wood, and leaves, as well as the flowers or fruit when they were present, sometimes trying to shoot material down from the crowns but more commonly having someone climb up. He used a pre-printed sheet of headings to record each species by its herbarium number and local name and to give a detailed description of the living tree.

Lane Poole devised a metal drying box that he used to dry his specimens instead of pressing them between paper in the conventional way. Even when dried initially and kept pressed in paper, he passed them through the drier periodically to ensure that they were kept free of mould until they could be despatched to the Queensland Herbarium for identification.

The specimens sent to the Queensland Herbarium for identification arrived in good condition, thanks to Lane Poole's attention to drying them carefully. They were examined by C. T. White and W. D. Francis. White and Francis provided Lane Poole with as many names as they could for his 1925 report. They noted that the collection showed that the flora of the Territories was closer to that of Southeast Asia than to Australia's.

Lane Poole collected wood samples that he examined himself using a set of hand lenses. He recorded a general description of each, the width of the sapwood, the colours of sap and heartwood, and measurements of the frequency of the rays and pores. He also remarked on how the wood cuts in general categories of 'cuts hard,' 'cuts firm,' 'soft to cut,' 'splits easily', and so on. Lane Poole also collected and described samples of the bark. His report includes measurements of the basic density of the wood samples and of the colour and presence of precipitates in solutions extracted from many but not all the wood and bark samples. He does not report whether he made the density measurements and extractions himself. (Presumably, this work was done by James Mann).

In 1927, Lane-Poole became the Commonwealth Inspector-General of Forests and Acting Principal of the Australian Forestry School (1927-44) in Canberra. He was also the Administrator of the Forestry Bureau which he had proposed to co-ordinate education, research, and policy (not formally established until 1930). The research section which he first promoted in Western Australia to include research into making paper from eucalypts was developed in Melbourne as the Division of Forest Products of the Council for Scientific and Industrial Research. The forestry research section of the bureau eventually developed as the Division of Forest Research, C.S.I.R.O in Canberra.

---

[33] *From exploitation to science: Lane Poole's forest surveys of Papua and New Guinea, 1922–1924. Historical Records of Australian Science 17: 71–90. by John Dargavel School of Resources, Environment and Society, Australian National University, Canberra, ACT 2000, Australia. Email: john.dargavel@anu.edu.au*

1928 to Present. **SACRED HEART MISSION Sawmill NEW BRITAIN**[34]

In 1928, the application for a timber lease by the Catholic Mission of Most Sacred Heart of Jesus for 2010 hectares at Ulamona was successful. They closed their mill at Kuriendal and established a new mill at Ulamona[35].

Ulamona Sawmill Jetty Sacred Heart Mission.

Source Michael Pearson.

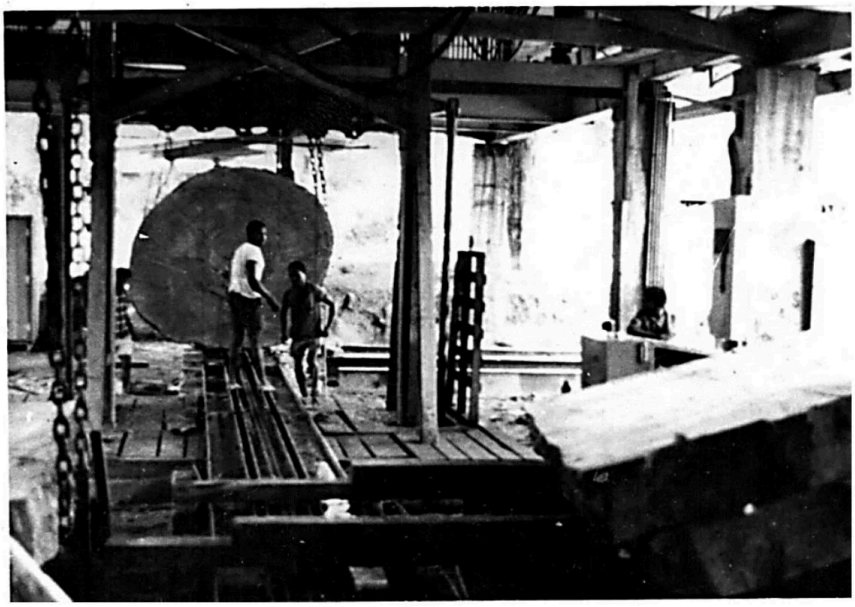
Ulamona sawmill. Source Ulamona Sawmill OIES Office of Information and Extension Services. Taken 1960s.

[34] *End of the Line* - A History of Railways in Papua New Guinea Bob McKillop & Michael Pearson UPNG Press 1997.

[35] Source: Mandated Territory of New Guinea Annual Report 1928 - 1929 p 94 pg. 280. Source: Pioniere der Sudsee - Werden und Wachsen der Herz = Jesu Mission von Rabaul zum Goldenen Jubilaum 1882 - 1932. p117, 118, 132 & 177.Yumi Pipel Bilong God – Histori bilong lotu katolik long Arsdaiasis bilong Rabaul 1982.

Sawn timber at Ulamona Mission sawmill in the shadow of Mount Ulawan ("The Father") an active volcano.

Source Michael Pearson 1960.



Ulamona sawmill with large solid Kamarere log.

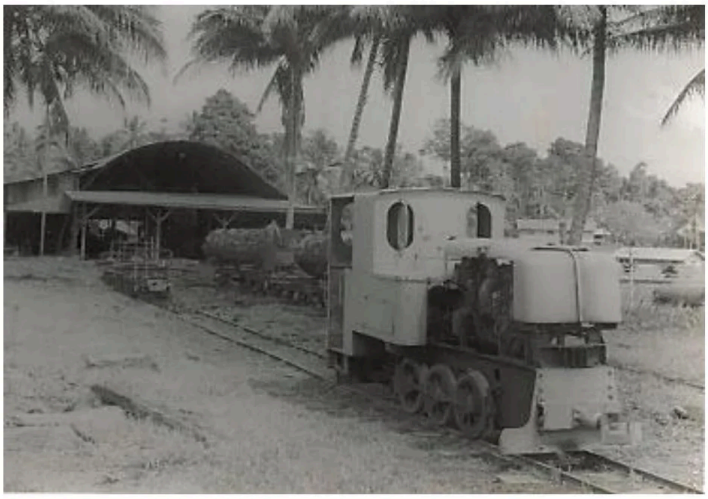
Source John Davidson 1978.

Timber stacks and railway yard Ulamona Sawmill, c.1960 .PNG National Archives

Source Michael Pearson.

At Ulamona, a 700 mm gauge logging railway was constructed from the sawmill inland for approximately 10 kilometres. A line of

lighter construction was laid over 100 metres from the mill down to the jetty to carry the sawn timber for loading onto ships. A steam locomotive was imported in 1928. A second steam locomotive reported to be Arn.Jumng Locomotivfabrick B/No 8644/1938 arrived in 1938/39. It was converted to diesel and was still in service at Ulamona in 1986.



Photos Ulamona sawmill WNB. Diesel 0-6-0 locomotive built on frame of Arn Jung steam locomotive and logging trucks.

Source Alan Bovelt/Michael Pearson Em Jung locomotive Ulamona sawmill 1980's which had been operating since WW2. 1960 PNG National Archives.

VUNAPOPE HEADQUARTERS NEW BRITAIN[36]

The Sacred Heart Mission at Vunapope established a sawmill and dressing facilities where timber from Toriu River, Kurindal and Ulamona operations was prepared for the domestic market. It was in operation by 1921.

From New Guinea Annual Reports. Sacred Heart Mission Headquarters Vunapope.

Source OIES 1960s.

Vunapope Timber yard looking to joinery and warehouse. Source:

Michael Pearson 1980.

Railway lines ran between pier, sawmill, joinery, warehouse, and slipway.

Source Michael Pearson 1980.

<u>1930's</u> Tinputz Catholic Mission Sawmill Bougainville.

Part Stationary Steam Engine.

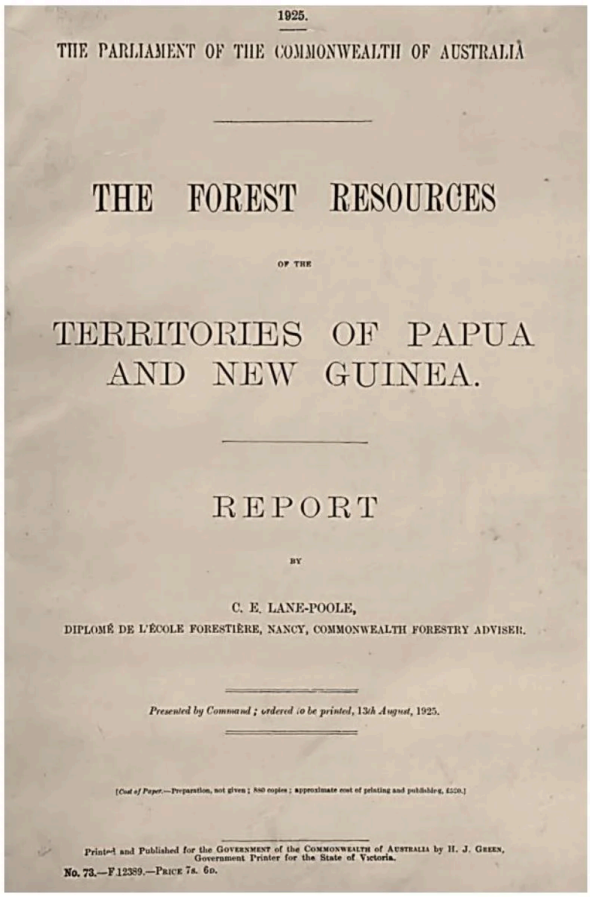
Photo credit Michael Pearson 1974[37].

A half-mile 2ft gauge tramway was constructed for the transport of logs and timber. It was later used as a tramway from the wharf to store.

[36] *End of the Line* - A History of Railways in Papua New Guinea Bob McKillop & Michael Pearson UPNG Press 1997.

[37] Michael Pearson personal communication 3 June 2020

1935 LANE POOLE FOREST RESOURCES OF THE GOLDFIELDS OF NG



1925.

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

THE FOREST RESOURCES

OF THE

TERRITORIES OF PAPUA AND NEW GUINEA.

REPORT

BY

C. E. LANE-POOLE,

DIPLOMÉ DE L'ÉCOLE FORESTIÈRE, NANCY, COMMONWEALTH FORESTRY ADVISER.

Presented by Command; ordered to be printed, 13th August, 1925.

[*Cost of Paper.*—Preparation, not given; 800 copies; approximate cost of printing and publishing, £50.]

Printed and Published for the GOVERNMENT of the COMMONWEALTH of AUSTRALIA by H. J. GREEN, Government Printer for the State of Victoria.

No. 73.—F 12389.—PRICE 7s. 6d.

In 1935**,** Lane Poole presented a report title [38]*Report on the Forests of the Goldfields of New Guinea: Together with recommendations regarding a forest policy for the whole Territory*.

The history of PNG Forestry is intrinsically linked to the development of the Bulolo Wau valleys gold fields and their natural stands of Araucarias. Readers need to refer to separate authors as James Sinclair[39] who have described in detail the history of the Bulolo Wau goldfields.

Lane Poole[40] in his report on the forests of the goldfields of Bulolo Wau in 1935 stated: *that the only asset that he could see to replace the wasting product, gold was timber. The region is purely a forest one, and its climate is decidedly a forest climate – in short proven forest country.*

In contrast to the emphasis placed on industry use – values by miners and government officials in the mining office, government forestry officials emphasise the potential for an industry and the wastefulness of the mining community. In his 1935 survey of timber in the Morobe goldfields, Lane Poole was concerned with value of timber and overly critical that the timber was not being used appropriately by mining companies. For example, cedar was used as an all-purpose resource when durability was necessary. He quoted the use of cedar for a water race when the cedar would have been put better to use in the production of fine cabinetry.

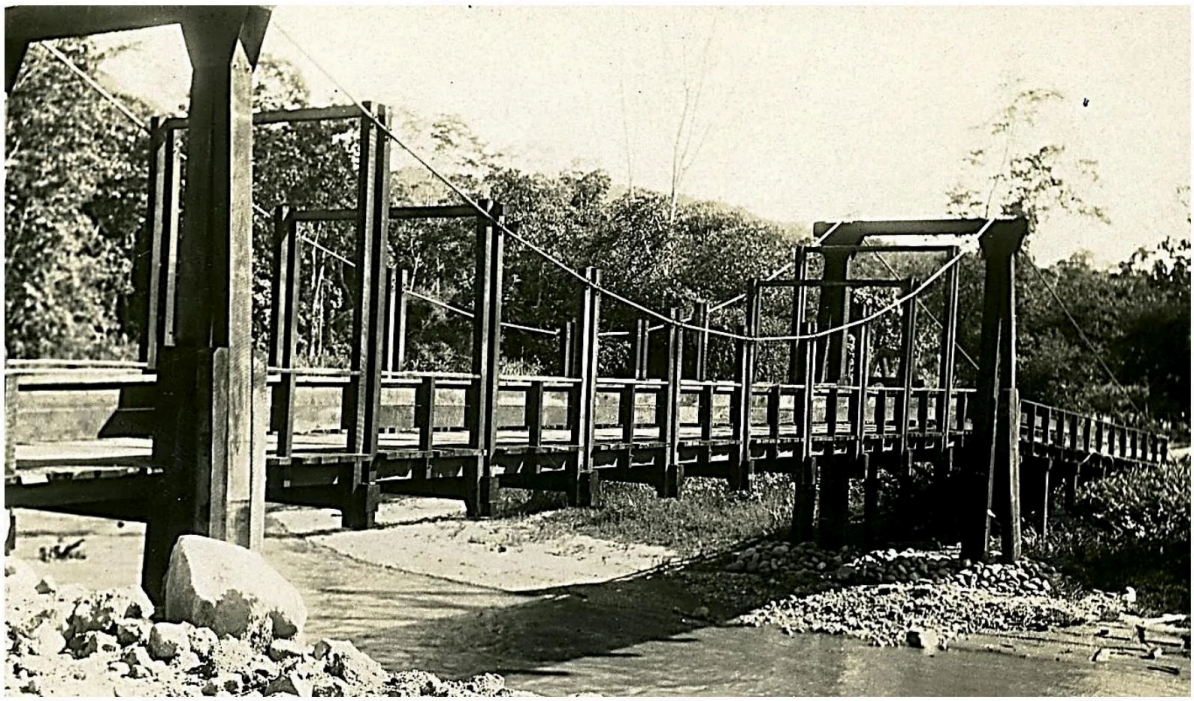
Lane Poole as the then Commonwealth Inspector General of Forests for the colony charged with making recommendations on the use of the resources found in the colony, enforced a set of values that sought to match grain and strength with products. He argued that the mining community needed to better use the resources available to them. They were too wasteful, knowing nothing of timber's value.

[38] Unpublished TS, 1935. NAA A11938/802

[39] James Sinclair 2019 ISBN 978-1-876561-15-4 "*UP THE CREEK - Edie Creek and the Morobe Goldfields*" Pictorial Press Corinda Qld

[40] Lane Poole, C.E., 1935. 'Report on the Forests of the Goldfields of New Guinea: Together with Recommendations Regarding a Forest Policy for the Whole Territory.' Unpublished TS, 1935. NAA

Evan Shield demonstrated this point with the following photograph of a bridge made from cedar.[41]



Cedar Bridge over Bulolo River above confluence with the Watut River before World War 2. Photo Credit Evan Shield

Photo Credit Evan Shield Jensens Bridge Bulolo Valley

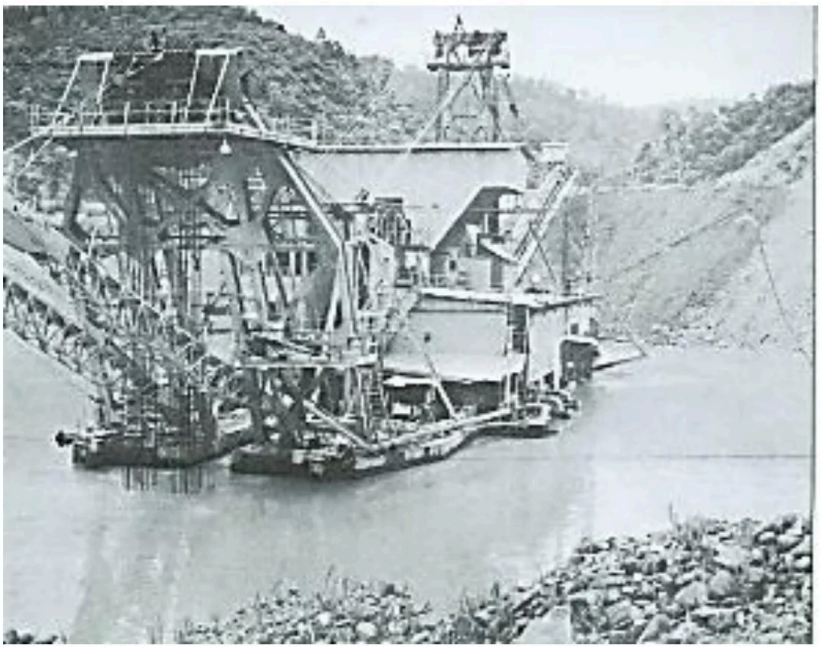
[41] Evan Shield Personal Comm 21/4/2020 "the misuse of timber species referred to by Lane Poole in 1935".

1930's Bulolo Wau Goldfields[42]

From the discovery of gold at Koranga Creek near Wau by William "Shark eye" Park in 1922 the development of the Wau Bulolo Valleys for gold mining with roads, townships and airstrips enabled a flourishing timber industry to be developed including large scale plantation development which continues to this day

PNG Forest Products evolved from Bulolo Gold Dredging Limited that commenced operations in large scale alluvial mining in 1932.

The Bulolo region was at the time one of the largest gold fields in the world.



Bulolo Gold Dredge (1960.)

Photo Credit PNGAA.

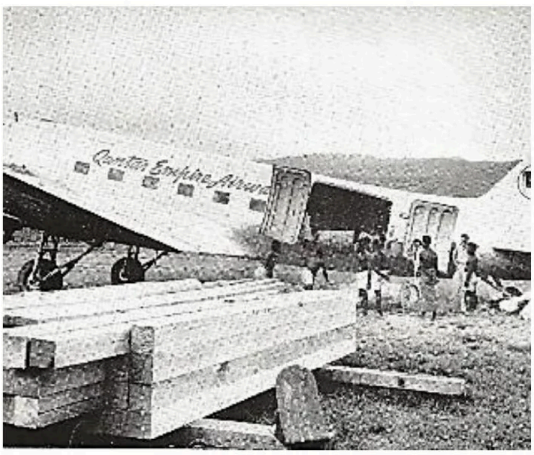
A total of 7 dredges scoured the valley floor, dredging thousands of tons of high-grade gold bearing ore long before roads had been built into the interior of the Territory.

.

No 6 Gold dredge based in Wau Valley 1963. Source PNGAA.

The development of almost inaccessible regions was pioneered with air transport.

[42] Ref: PNGAF Mag # 9D-4H of 22/2/22. Des Harries Wau p 1-63.



With the stimulation of gold discoveries, airfields for example were opened in the 1920's at Salamaua, Wau and alter Lae. Aircrafts used ranged from Super Constellations on the external routes and DC.3's on major internal routes to small easily manoeuvrable aircrafts on small strips in rugged countryside.

Timber baulks being flown out of Bulolo Wau.

Source Department of Territories 1959.

Junkers G31go at Bulolo airstrip (presumably) Source PNGAA.

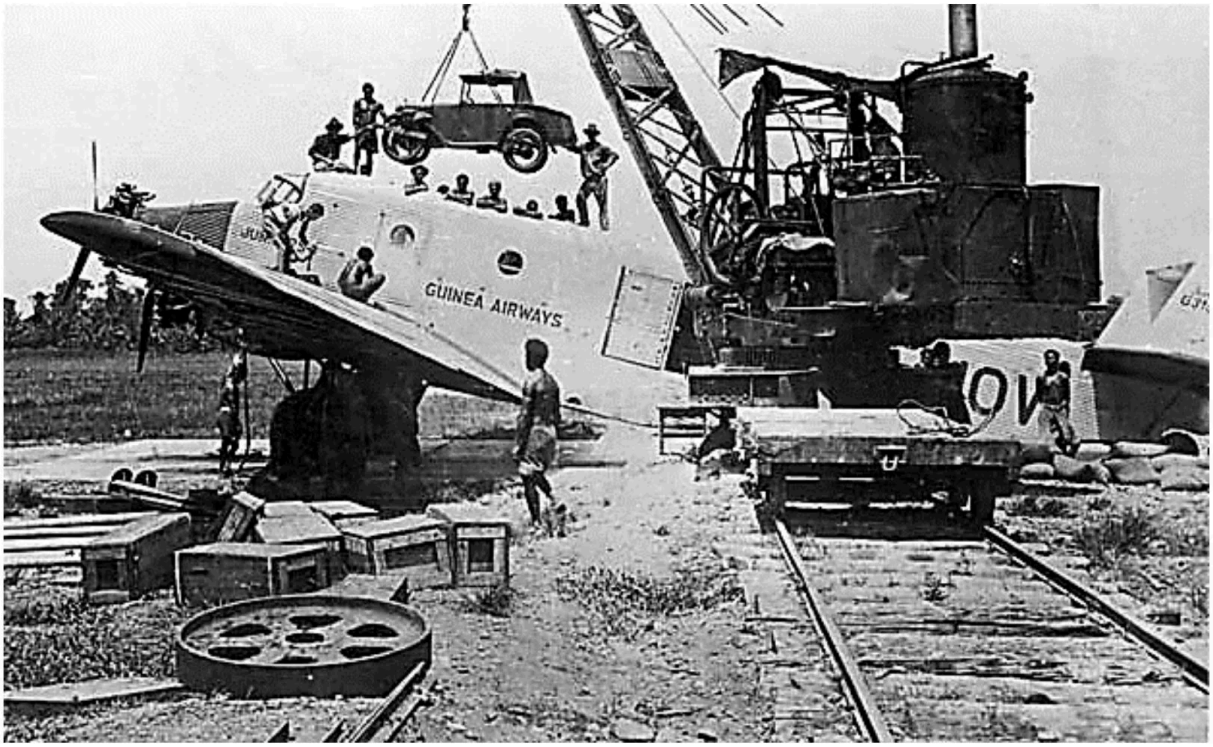
In November 1927 Guinea Gold (No Liability) who serviced the New Guinea goldfields from Lae, transformed into Guinea Airways.

In the 1930s Guinea Airways became one of the largest air transport operators in the world, carrying more freight by air than the rest of the world's airlines put together. Among other cargoes, throughout the 1930s eight 3,000-ton gold dredges were flown from Lae, on the New Guinea north coast, to Bulolo in the highlands in one of the first major airlift operations. Since there were no roads, every piece of the dredge had to be designed to be air transportable.

The all-metal Junkers G31go was the mainstay of the Guinea Airways fleet of cargo-lifters from May 1931, a total of four of these aircraft being used. Three (VH-UOU c/n 3011, VH-UOV c/n 3012, VH-URQ c/n 3000) were owned by Bulolo Gold Dredging Co. and operated on their behalf by Guinea Airways, whilst the fourth, VH-UOW c/n 3010, was owned by Guinea. These aircraft were built from the outset as freighters, with portholes instead of

windows and a removable loading hatch over the forward fuselage. They were powered by three 500hp Pratt & Whitney Hornets (except VH-URQ which had 525hp engines).

Junkers G31go VH-UOW – Guinea Airways at Wau airstrip. Source PNGAA.



At Lae, a steam crane was used for loading the Junkers G31s. Although there were roads in the highlands, there was no road into the highlands from the coast so even cars, such as the Austin 7 in the photo above, had to be flown in. This was by no means the smallest car to

travel by air! The rail line ran from the loading area at the Lae aerodrome to the pier so cargoes could be moved easily to the aerodrome once unloaded from their ships.

A Junkers being unloaded at the upper (southern) end of the one-way Wau strip.

Three intriguing artefacts tell the story of New Guinea gold-mining pioneer Cecil Levien.[43]

In September 1954, three unusual items were left to the Mitchell Library in the will of a Mrs MM Levien: the first miner's right issued in New Guinea (to her husband Cecil Levien), the first ounce of gold obtained from the Bulolo mine, and a model aeroplane presented to Levien in 1927. No explanation was provided for the bequest, nor any information about its significance.

The extraordinary story that links these three items was the inspiration for Ion Idriess' highly popular 1933 novel Gold Dust and Ashes. *Historical accuracy was not his great strength, but Idriess was a superb communicator and the book went through 26 editions over the following 30 years.*

Following years as a largely unsuccessful gold miner and farmer in Australia, and a stint training at the Royal Military College, Duntroon, Cecil Levien joined the military

---

[43] *An ounce of gold and a model aeroplane*: Michael Waterhouse..Historian Michael Waterhouse is the author of Not a Poor Man's Field. The New Guinea Goldfields to 1942 — An Australian Colonial History (Halstead Press, 2010).

administration in New Guinea in 1919, transferring to the new Australian civilian administration in 1921. He was tough, wiry and resourceful and in July 1922 was appointed Acting District Officer, Morobe.

Some distance inland, though the area was still closed to mining, Shark-Eye Park and his mate Jack Nettleton were illegally extracting gold from Koranga Creek, a small tributary of the Bulolo River, using crudely fashioned sluice boxes. And they were doing well. But after they experienced trouble from marauding Kukukuku villagers, a patrol officer went in to settle things down. In their camp, he saw six bags of gold that Park and Nettleton had already accumulated and reported this to Levien.

In mid-December 1922, Levien visited Koranga Creek. What he saw made him realise his future didn't lie with the Territory's administration. A fortnight later, the new mining warden, Jack Lukin, issued the first miner's right to Levien. While it gave him the right to apply for a claim, Lukin's annotation suggests he thought Levien had taken it up merely as a curiosity.

Levien certainly intended to resign from the Administration and become a miner, but he also had a bigger scheme in mind: to peg leases on and around the Bulolo River and on-sell these to a syndicate in which he would retain a share.

Mining became legal on 1 April 1923, and a fortnight later applications were made for four leases, Kaili 1, 2, 3 and 4. The applicants were all apparently dummies for Levien himself. The leases were pegged by Shark-Eye Park, for whom Levien had been quietly providing supplies since his visit four months earlier. Over the next few months, using a mining engineer as an intermediary, Levien offered a group of potential investors an option over the leases, and in August 1923 Kaili Gold Options NL was formed.

Under the terms of the deal, Levien was to contribute £1000 towards the cost of testing the leases. If the results were good and the option was exercised Levien would receive £10,000 cash and 25% of a new company to work the leases. However, events were conspiring to force Levien's hand. His efforts to discourage another experienced prospector from reaching the Bulolo aroused Lukin's suspicion, who reported his concerns to the Administrator. In September, the Administrator asked Levien to respond to Lukin's allegations. Unconvinced by Levien's account, the Administrator asked him to resign.

Within days, Levien was on a ship to Melbourne, carrying 250 ounces of gold from Koranga Creek. In an effort to generate enthusiasm among investors, the gold was put on public display in October 1923 at the offices of the Secretary of Kaili Gold Options. The small sample of gold bequeathed to the Mitchell Library is believed to be from that display, probably retained by Levien for sentimental reasons.

The next 18 months proved the old adage 'When one door closes, another opens'. Testing demonstrated that large-scale mining of the Kaili leases was unlikely to be economic and the option was allowed to lapse. Downstream from the leases, however, the Bulolo River opened out into a broad valley. Levien had come to the view that, over the ages, gold would have been carried downstream and distributed across the valley as the river slowed. He envisaged a major dredging operation powered by hydro-electricity, with planes flying in all the machinery required from the coast over otherwise impassable country.

Australian investors showed little interest in Levien's vision until early in 1926 when news reached Australia of a rich gold discovery at upper Edie Creek, a tributary upstream from the Bulolo valley. Levien adroitly used the discovery to promote his scheme, and gained sufficient interest from investors to form Guinea Gold NL, in which he had a 25% interest.

As the company's field superintendent, Levien pegged six leases covering 1050 acres (425 hectares) in the Bulolo valley. Labourers carved an aerodrome out of the jungle on the Lae waterfront and constructed another on a steep gradient at Wau. Under pressure from Levien, Guinea Gold acquired a De Havilland 37 biplane, which arrived at Lae in March 1927: the first aeroplane to fly in New Guinea.

While Levien's obsession with air transport was driven by his vision for the leases in the Bulolo valley, he soon realised it was highly profitable in its own right. He exerted pressure on the Guinea Gold Board to establish a new company, Guinea Airways, and acquire a Junkers W34, with a payload of 2000 lbs (900 kg), three times that of the DH37. The model held by the Library commemorates Levien's role in purchasing the first of six W34s acquired by Guinea Airways.

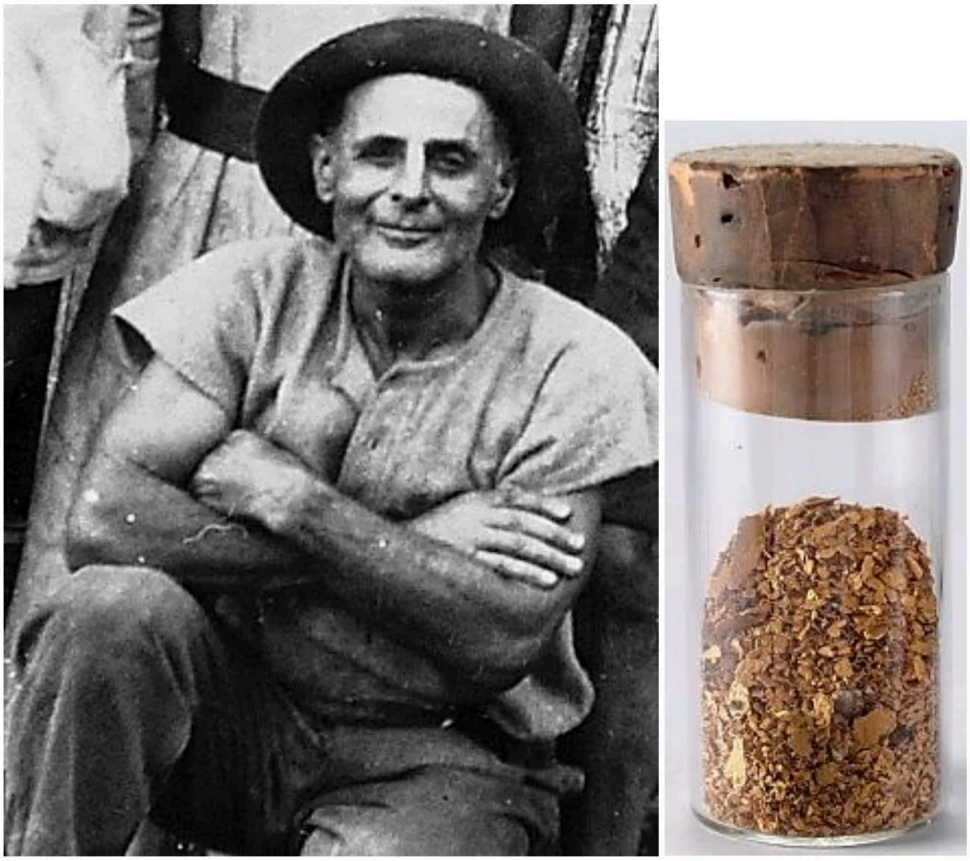
Meanwhile, Guinea Gold was fast running out of money. In April 1928 it was saved from collapse when a small Canadian-based mining company, Placer Development, purchased an option over the Bulolo leases. Within 12 months, testing revealed values similar to Levien's earlier estimates, justifying the construction of two dredges and a hydro-electric power plant. But it would be several more months before the final piece of Levien's vision fell in to place, with a decision to acquire two of the world's largest planes—Junkers G31s—to fly dredge parts from Lae to Bulolo. A seminal event in the country's history, the launch of the first dredge in March 1932 attracted Europeans from all over the Territory.

One person was missing, however. Cecil Levien had died suddenly of meningitis two months earlier while on a visit to Melbourne. Two days later, his ashes were taken up in one of the G31s and scattered over the Bulolo valley: his were the ashes in the title of Ion Idriess' book.

The years that followed proved the validity of Levien's vision in a spectacular way. Placer Development's operating company Bulolo Gold Dredging constructed eight dredges, flying in everything required on the two G31s. Up to the Japanese invasion in January 1942, the dredges produced 1.3 million ounces (36,850 kg) of gold and 600,000 ounces (17,000 kg) of silver.

Throughout the 1930s, New Guinea led the world in commercial aviation. Its planes flew more than half as much freight as those in the US, Canada, Germany, France and the UK combined. In no year did any other country's planes carry more.

The three items bequeathed to the Mitchell Library are all 'firsts'. Levien was a proud man and doubtless regarded them as historically important. It's likely that, before his sudden death, he talked to his wife about their significance and that her donation was, in effect, carrying out his intentions. Whatever the reason, they remain symbols of a remarkable man, whose vision and persistence transformed New Guinea between the wars.



Cecil Levien. Photo: Michael Waterhouse. First ounce of gold from the Bulolo mine, c.1923

Model given to Cecil Levien of the first Junkers W34 acquired by Guinea Airways, LR 42 Levien's gold and model aeroplane are on display in the Amaze Gallery, Mitchell library.

1936 AN ATTEMPT AT INSTITUTIONAL STRENGTHENING

In 1936, the Timber Ordinace of New Guinea was superseded by the Forestry Ordince 1936.

Responsibility for the administration and development of the forest resources of Papua New Guinea and control of its forest industry was vested in the Department of Forests under powers conferred by the Forestry (New Guinea) Ordinance 1936-62 and the Forestry (Papua) Ordinance 1936-62 and the Forestry regulations as amended.

Nearly all forest in PNG is grown on customary-owned land. The Department of Forests after 1945 had to create a forest concession system that catered for all parties i.e., landowners, government agencies and developers.

For any timber to be harvested on an area, the State had first to acquire timber rights from the landowners before allocating the rights to a logging company. Prior to 1992, this was done through either the negotiation of a timber rights purchase or a local forest agreement. Since 1992, when a new Forest Act came into force, state acquisition of timber rights has been through the negotiation of forest management agreements between the PNG Forest Authority and customary owners.

The Territory policy for the extraction of timber from customarily owned ('native') forests was developed over time through the mechanism of a 'timber rights purchase' (TRP) agreement, which was a way of purchasing so-called 'timber rights' from customary owners of forests, but not alienating the land. Virtually all logging companies in the territorial period were Australian-owned or Australian-based. Some of these did a degree of processing locally, but most timber was exported as round logs. The legal framework for forest exploitation had three main elements: Timber Rights Purchase (TRP). Under this arrangement the State acquired timber rights where customary owners were willing to sell. The State then issued a permit or licence to remove the timber on agreed terms and conditions, including the payment of royalties, a portion of which was passed on to customary owners. The TRP arrangement was intended for large-scale exploitation and was managed by the Department of Forestry.

Timber Authorities (TA) could be issued, on payment of a fee, to enable any person to purchase a limited quantity of timber directly from a customary owner. Without a TA no one other than a Papua New Guinean could purchase forest produce from a customary owner.

In 1937, in New Guinea, there was a sudden interest in log export, which caused the Administration[44] to revise its legislation and consider the establishment of a forest service. In that territory, there was a mill at Waterfall Bay and mission mills also at Finschhafen, Alexishafen and Marienberg. Mills had also started at Bulolo and Wau, having been flown in from the coast. Sawn and milled timber, however, was still being imported from Australia and the Philippines to Rabaul when McAdam arrived in New Guinea in 1938 to initiate the new Forest Service.

By **1937-1938**, although nothing had eventuated in Papua or the Northern Territory, an assistant forester had been trained in Canberra and a forest policy had been initiated for Norfolk Island and a qualified forester "J B" Jim McAdam MM (1910-1959) had been appointed to the Mandated Territory of New Guinea in 1938.

[44] PNG Scientific Society Presidential Address 1952 "Forestry in New Guinea" J B McAdam

1939-1945 WORLD WAR 2[45] - *Sawn Timber and Round timbers* [46].[47]

NGG Limited mouth Binatang Creek Sept 1941 (courtesy Jim Cavanaugh) Wau.

Pit sawing PNG[48]. Source Ken Granger.

[45] Ref: PNGAF Mag # 2 of 7/10/20 p 27; Ref: PNGAF Mag # 3 of 3/11/20 p 40

[46] Personal communication Ken Granger 8/3/19. Ref: PNGAF Mag # 3 of 3/11/20 p 12

[47] Ref: PNGAF Mag # 3 of 3/11/20 p 1-116. Ref: PNGAF Mag # 9B-5 of 21/4/21 p 11.

[48] Ref PNGAF Mag # 9B of 25/2/21 p2

With the threat of war in the Pacific, McAdam enlisted in the Australian Military Forces on 19th September 1940 at Wau together with Jim Cavanaugh and Reay Weidenhofer. He began full time duty with New Guinea Volunteer Rifles on 22nd January 1942 and promoted to sergeant. After the Japanese invaded Salamaua in March, he led a party of scouts including Jim Cavanaugh, which established an observation post within a mile (1.6 km) of enemy positions. The intelligence gathered by the team was crucial to the success of the Australian raid in June. McAdam acted as a guide in the foray. Transferred to ANGAU in September, he was awarded the Military Medal for his outstanding service at Salamaua.

Observation Tree Mubo.

Photo Credit Australian War Memorial 1942.

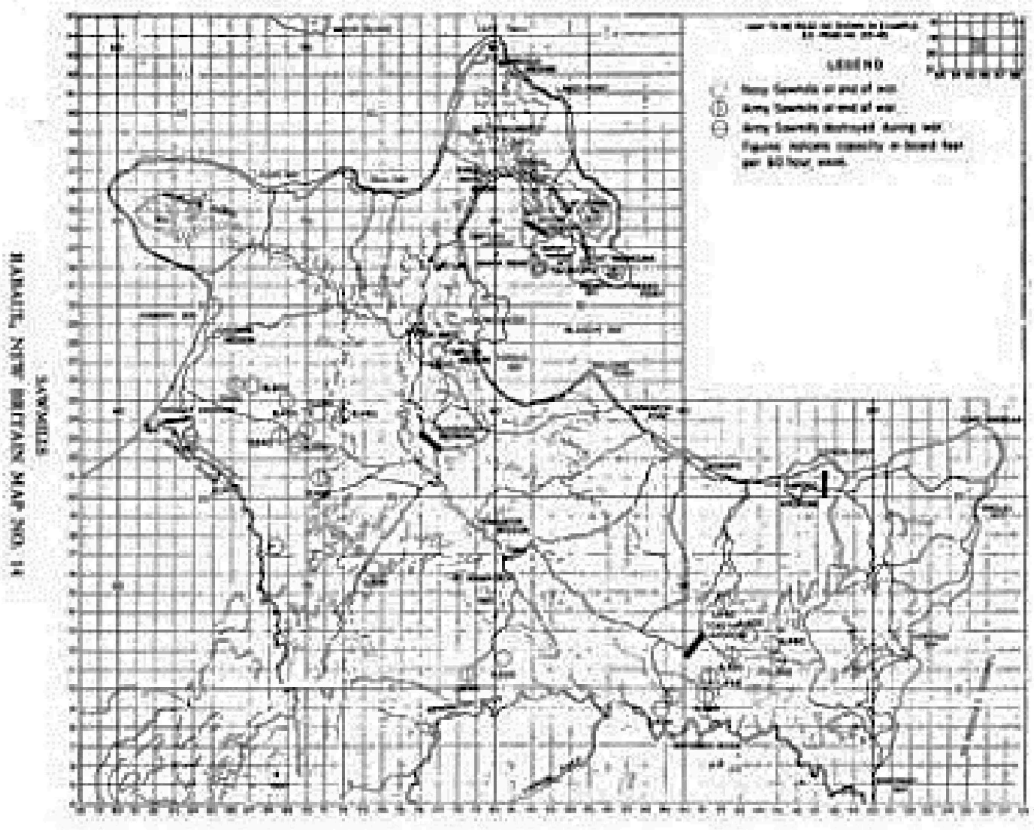
L to R Geoff Archer (gold miner Wau), Jim Cavanaugh (forester,) Jim McAdam (forester). Photo taken by war photographer Damien Parer in July 1942 just after the famous Salamaua raid.

Photo Credit Australian War Memorial.[49]

The outbreak of World War II ended all civilian activities in the Territories of Papua and New Guinea and slowed down forestry development. The Japanese attack stopped all activity

[49] Details from Linda Cavanaugh Manning 9 April 2019

for a year but thereafter stimulated development.[50] The Japanese Forces took over many New Guinea sawmills in addition to building their own mills for their military needs.



Details from the US Strategic Bombing Survey[51] of the campaign against Rabaul in 1942-5 showed the locations of 29 Japanese sawmills in Rabaul. *It was reported that the Japanese forces on New Britain took advantage of the large stands of timber there to supply themselves locally with much of their building material. Both Army and Navy operated sawmills and in 1943 there were some 20 of these with a total output of about 185,000 board feet per week.*

Presumably, similar Japanese sawmilling operations were operated in areas as Wewak and Madang,

The demands and devastation caused by the war, the expanded services needed to cater for the immediate development of the community, plus an increased demand for sawn timber in Australia provided the impetus to expand the scope of the forests from its traditional role.

Owing to the shortages of supply and difficulties with shipping, it was decided to produce as much as possible of these requirements in the islands themselves. In 1943, ANGAU reorganised the three pre-war mills and established a fourth at Waigani near Milne Bay.

Many engineering units established small operations. The Americans brought in sawmilling units. The Australian Government recalled the three military Forestry Companies from England and threw them into the fight for timber in New Guinea early in 1944. The New Zealand Air Force also had sawmilling units attached.

[50] Encyclopaedia of PNG, Vol 1 A-K, Peter Ryan (General Editor), Melbourne University Press in association with the University of Papua New Guinea, 1972, Dewey 919.5003, ISBN 0 522 84025 6.

[51] Personal communication Ken Granger 10/5/2018.

July 1943 Conference re Utilisation of the Forest Resources of TPNG

In July 1943, a conference convened to consider the utilisation of the forest resources of Papua New Guinea to meet the requirements of the Allied Forces in the area, recommended to the Commonwealth Government that a central timber control be set up to do this, and that any timber surplus to the needs of the service be sent to Australia. As a result, the Engineer in Chief of the Australian Forces was instructed to raise a New Guinea Forest Service within the Royal Australian Engineers, composed of a Headquarters Unit and three or more Survey (reconnaissance) Units to perform in New Guinea, those functions normally carried out by a civil forestry department. Its duties were outlined as

1. The implementation of forest policy as determined by the Commander in Chief.
2. Prior allocation and survey, as far as operational conditions permitted of areas to be milled by all Australian Army sawmilling units.
3. The compilation of information on milling necessary for compensation purposes.
4. Liaison with United States of America forces to bring all timber liaison in New Guinea under a common policy and to obtain records necessary for reverse lend lease adjustments.
5. Liaison with Australian New Guinea Administration unit (ANGAU) on civil rights.
6. The undertaking of surveys to provide the maximum forestry information.
7. Correlation and maintenance of forestry information and records in such a manner that they could be handed over to a civil service at an appropriate time.

At the conference in Melbourne on 29/7/1943 representatives of the Australian and US Armies (including Jim McAdam), ANGAU, the Australian Inspector General of Forests (Lane Poole), the Allied Works Council, the Australian Controller of Timber, Department of Munitions and Department of External Territories, focused on three main questions - shipping, sawmill plant and manpower with a central timber control to come under ANGAU led by Jim McAdam.

By May 1994, McAdam was tasked with:

- organising a survey of possible harvesting areas.
- assemble all information pertinent to the timber resource and milling of such timbers.
- advice on sawmill equipment and supervision of all Australian sawmill personnel.
- maintain records of the quantities of timber milled by Australian and USA forces.
- The Australian command had difficulty with USA forces. They were suspicious that such data would be the basis for a claim against the USA.
- **McAdam deserves credit for insisting that all timbers harvested be recorded for eventual recompense to be made to the native owners for use of their trees. This became part of official Australian orders.**

The major tasks were the location of supplies of timber for immediate operational requirements of the various war services, and an assessment of the forest resources of the south-west Pacific Area, for both operational and post-war purposes, to the extent that available transport, communications, and enemy occupation permitted. In this, considerable use was made of air-photo interpretation supported by ground reconnaissance and sampling.

To undertake McAdam's task**,** the raising of 1 Command Royal Engineers (New Guinea Forests) was complete with the Headquarters Unit, where Lieutenant Colonel Jim McAdam MM (head of pre-war New Guinea Forest Service) as the Commanding Officer of 1 Aust CRE (New Guinea Forests) (the headquarters unit); Major WT (Bill) Suttie commanded the 1 Australian Forest Survey Coy and Major A E (Bert) Head (Victoria) in command of the 2

Australian Forest Survey Coy were functional by May 1944. Two officers of the pre-war service Mr Cavanagh and Mr Vickery were recruited.

Major Max Jacobs headed the technical unit in Australia responsible for organising wood testing etc.

Dr Eric Dadswell Yalu Forest Resource Workshop July 1944. Photo credit Linda Cavanaugh Manning.

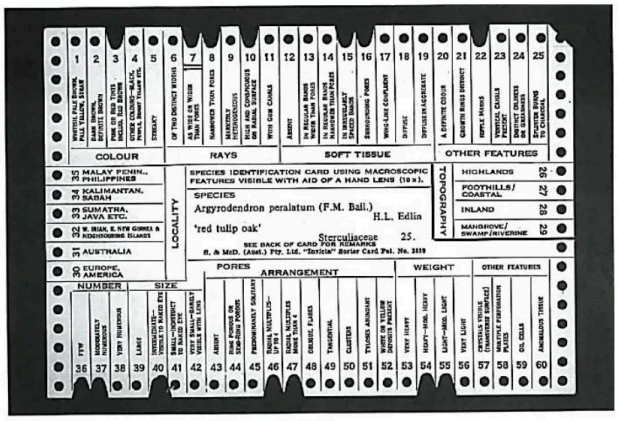


Fig. 1. Typical Macro Key card previously used in CSIRO.

An example below of a card sorting system similar to what Dadswell produced for timbers of New Guinea and neighbouring islands in 1940's.

The unit had come together about mid-1944 and for the next three months at Lae was put through an intensive training in recognition of New Guinea species and handling New Guinea report on immediate timber supplies for operational purposes. During this time, a plan was draw up for the survey of the timber resources of as much of the Territories as possible. This survey was launched about the end of 1944 and continued till the war ended, and the units were disbanded about October 1945. One of the functions of the CRE-NG Forests written in instructions at the formation was "*the maintenance of forestry records in a manner suitable for handing over to a Civilian Forest service at the appropriate time."* Consequently, when the unit was disbanded, Mr Vickery, who was now the Forest Ranger at Bulolo, was left in charge of the records, which he handed over to Mr Cavanaugh, when he returned to the Islands in his civilian capacity[52].

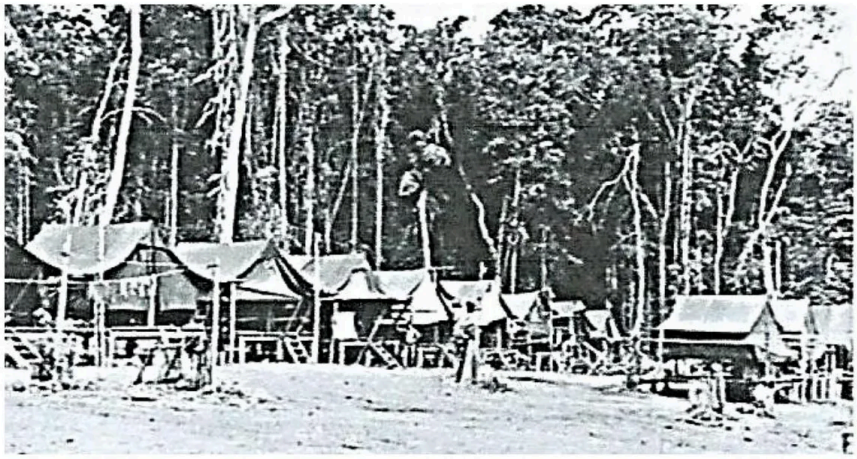
Two years of intensive work in resource inventory was carried out. Using aerial photographs and criteria evolved from field correlation studies, vegetation types were mapped over an area of some 56,000 square miles, about 30 per cent of the total land area, on one inch to the mile military maps. By the end of the war nearly a quarter of the vegetation mapping had been ground checked. This work provided an excellent base for post-war forestry development.

The Australian Army sawmillers all established sawmills in PNG By the end of the war, approximately 190 thousand cubic metres of sawn timber had been produced plus many other round timbers for encampments, corduroy, bridge timbers, telephone posts, piles, firewood, and many other needs of a vast army.

[52] Reference: PNGAF Mag # 3 of 3/11/20

Australian ArmyWW2 Sawmilling Endeavours

In the forests near Lae, they erected a sawmill in less than six weeks, equipped with seven saw benches, taking logs up to 5 feet in diameter and giving an output of 100,000 feet of sawn timber a week for use by the Australian and American forces.



Base Camp New Guinea Photo Credit State library of South Australia.

Australian Sawmill Lae Photo Credit State library of South Australia.

Barking logs Lae Photo Credit PNGAA Frances Laker Collection.

Photo credits Australian War Memorial

Busu Forest, Lae area, New Guinea. 1944-07-26. members of the 2/3rd forestry Company, Royal Australian Engineers, felling a tree from springboards. The "bush bosses" are attempting to teach the natives how to do it their way.

Lae, New Guinea. 1944-07-26. A member of 2/3rd Forestry Company explaining to Australian New Guinea Administrative Unit (ANGAU) natives the correct method of using a crosscut saw, in the Busu Forest.

1945[53]. Yalu

Lae 6/8/1944. The portable sawmill unit of the 2/3rd Forestry Unit.

Photo credit Australian War Memorial (maybe a Saxton mill but unsure).

Yalu sawmill 30/7/1945 Headquarters Platoon 2/1 Forestry Coy.

Photo credit Australian. War Memorial.

[53] Ref: PNGAF Mag # 3 of 3/11/20 p 31.

AUSTRALIAN WAR MEMORIAL 094733

AUSTRALIAN WAR MEMORIAL 094732

Yalu area, New Guinea, 1945-07-30. logging arch and d8 tractor operated by no. 2 platoon, 2/1 forestry company, Royal Australian engineers.

AUSTRALIAN WAR MEMORIAL 094743

YALU AREA, NEW GUINEA, 1945-07-30. AN M 20 CRANE BEING OPERATED BY MEMBERS OF NO. 3 PLATOON, 2/1 FORESTRY COMPANY, ROYAL AUSTRALIAN ENGINEERS.

AUSTRALIAN WAR MEMORIAL 084458

LAE, NEW GUINEA. 1944-12-21. CAPTAIN G W BROWN, (1), AND LANCE CORPORAL T A YOULTEN, (2), 2/3 FORESTRY COY ALONGSIDE A LOG LOADED BY BULLDOZER ONTO A TRUCK AT THE UNTHANK MILL.

AUSTRALIAN WAR MEMORIAL 094725

YALU AREA, NEW GUINEA, 1945-07-30. THE CANADIAN BREAKING DOWN SAW AT NO. 2 PLATOON SAWMILL, 2/1 FORESTRY COMPANY, ROYAL AUSTRALIAN ENGINEERS

AUSTRALIAN WAR MEMORIAL 094727

YALU AREA, NEW GUINEA, 1945-07-30. PERSONNEL OPERATING NO. 1 BENCH, 2/1 FORESTRY COMPANY, ROYAL AUSTRALIAN ENGINEERS,

AUSTRALIAN WAR MEMORIAL 075218

Lae New Guinea 6/8/1944 Lt E J Bates QX19131 Section leader of 2/3 Forestry Coy filing teeth of a large circular saw in Unit Workshop. Photo credit Australian War memorial

AUSTRALIAN WAR MEMORIAL 075185

LAE, NEW GUINEA. 1944-08-11. GENERAL VIEW OF THE SAWMILL OF THE 2/3RD FORESTRY COMPANY. IDENTIFIED PERSONNEL ARE: - VX52515 CAPTAIN J.G. SAXTON (1); QX150032 SAPPER KERR (2); QX19131 LIEUTENANT E.J. BATES, OFFICER- IN- CHARGE (3).

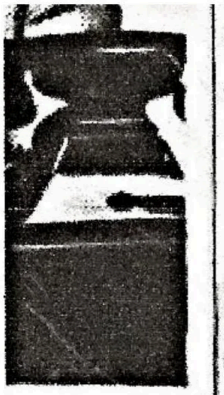
Officers outside mess of 2/3 Forestry Coy. Lae NG 21/12/1944. #1 Capt. G Brown; # 2 Lt E J Bates; #3 Lt D H Munro (TPNG Forests); # 4 Capt. J Saxton; # 5Lt K L Ross; # 6 Lt C L Cameron; # 7 Major HR Parke Officer Commanding.

Photo credit Aust War Memorial.

TPNG Forests 1960's Doug and Dulcie Munro

Photo credit Cliff Southwell.

Douglas Henry Munro service number QX7257; rank Lieutenant. he was born in 1909 at Kyogle NSW. He enlisted at Kelvin Grove Queensland. After World War 2, he worked at the sawmill at Yalu via Lae before moving to the Regional Office Lae



Axemen Do Big Job In New Guinea

From PAUL GOLDENSTEDT

Australian axemen in New Guinea have done a tremendous job for the Army.

Timbergetters from Queensland and other Eastern States and "jarrah-jerkers" from Western Australia have hacked roads through the jungle, cut timber for bridging, decking, and hutments, and cleared areas for playing fields.

Before he swung his axe the soldier often had been on the move encumbered with 60 or 70lb weight of weapons, ammunition and equipment.

Infantry and engineers of the Ninth Division showed outstanding courage and endurance when they hacked supply routes out of the jungle in the drive from Red Beach to Lae.

The 55-mile march of the 2/2nd Pioneers, carrying personal equipment, weighing 80lb, through almost impenetrable jungle, over mountain fastnesses and surging rivers and through swamps and kunai from Tsili Tsili to Nadzab in the 7th Division converging move on Lae from the north-west, was one of the toughest made in the jungle war.

Timber For "Cities"

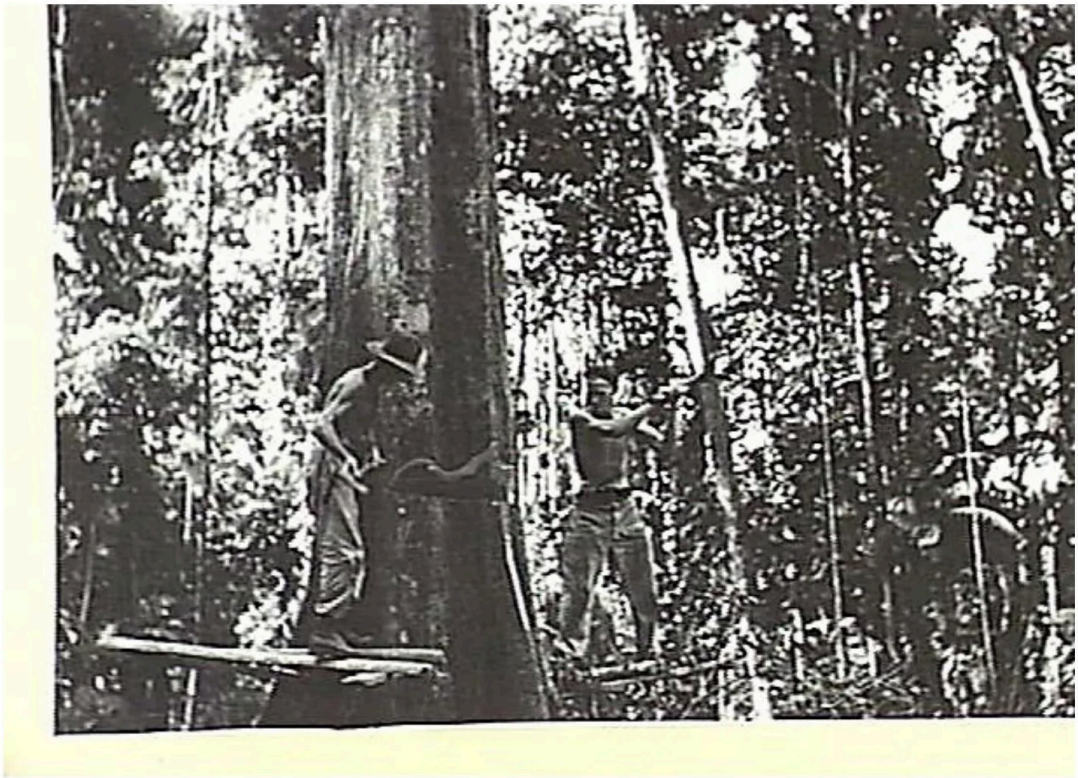
In one area a forestry unit in the last seven months has cut more than 5,500,000 super. feet of timber, and hauled in giant 80 and 100ft. logs—enough timber for 500 five-roomed cottages.

With tractors and log-arches capable of supporting 12 and 14 tons they have dragged these forest giants down to the mills as if they were mere sticks.

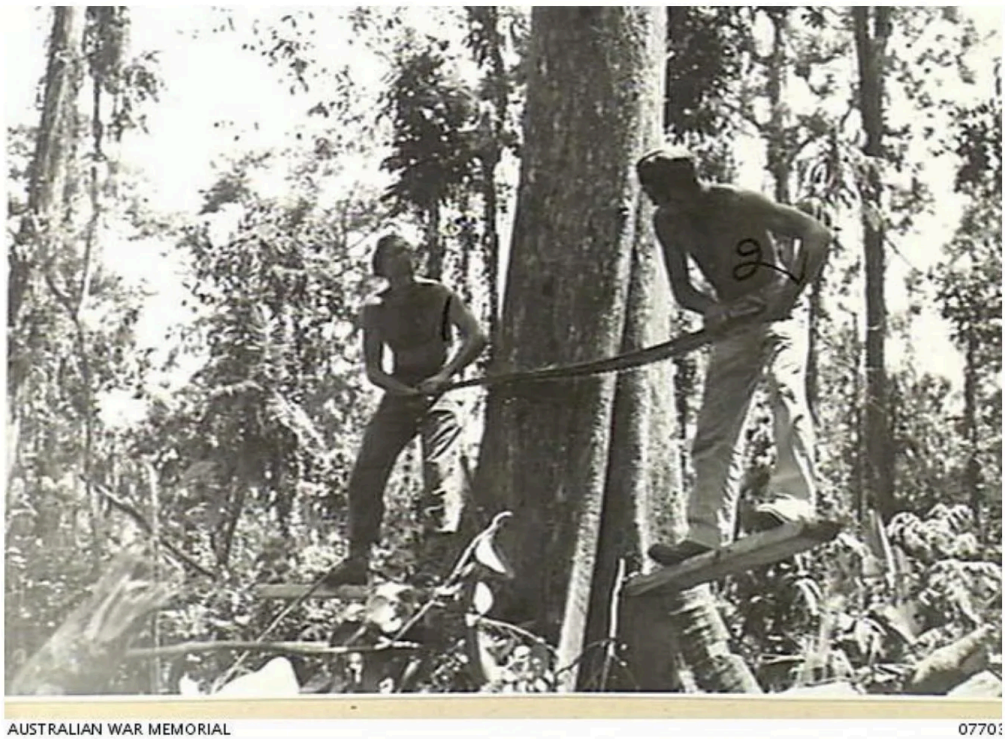
Sweating in the tropical heat from early morning to dark they have cut planks for decking, flooring, carrier-beams, and uprights for all forms of building and construction.

In some areas veritable "cities" have risen where a year ago there was nothing but jungle.

https://trove.nia.gov.au/newspaper/article/48947635?
02 Mar 1945 The Courier Mail Brisbane Qld 1933-1954 Page 4
"Axemen do Big Job in New Guinea."



Torokina area, Bougainville Island. 1945-02-10. Sapper G. Burke (1) and Sapper F I. Blanch (2) no 3 platoon, 2/2nd forestry company scarfing a large tree before felling.



Bougainville Island, 1944-11-17. wx2773 Sapper McKinnon (1) and wx15927 Lance Corporal N M Treloar 2/2nd forestry company, using a crosscut saw to fell a large tree
Photo Credit Australian War Memorial

Cross Cutting logs ready for extraction. Photo credit Australian War Memorial

Bougainville. Corporal Dave Hughan of Jarrahwood, WA, drives the tractor dragging great logs into the Australian Forestry Unit sawmill. Two native men help the operations.

AUSTRALIAN WAR MEMORIAL 079015

TOROKINA AREA, BOUGAINVILLE ISLAND. 1945-02-10. SAPPER A.W. GLASSBY (1) AND SAPPER F.S. MCARTHUR (2), NO 3 PLATOON 2/2ND FORESTRY COMPANY USING A CATERPILLAR TRACTOR TO HAUL A LARGE LOG TO THE UNIT SAWMILL.

AUSTRALIAN WAR MEMORIAL 079018

TOROKINA AREA, BOUGAINVILLE ISLAND. 1945-02-10. SAPPER E. HAYNES, NO 3 PLATOON 2/2ND FORESTRY COMPANY USING A CATERPILLAR TRACTOR TO LOAD LARGE LOGS ON TO A TIMBER JINKER

AUSTRALIAN WAR MEMORIAL 077037

BOUGAINVILLE ISLAND, 1944-11-17. PERSONNEL OF THE 2/2ND FORESTRY COMPANY ROLLING A LARGE LOG ONTO THE LOG TROLLEY AT THE UNIT SAWMILL. IDENTIFIED PERSONNEL IS: - WX15926 SAPPER V.R. RAPER (1).

AUSTRALIAN WAR MEMORIAL 077038

BOUGAINVILLE ISLAND, 1944-11-17. PERSONNEL OF THE 2/2ND FORESTRY COMPANY CUTTING A FLITCH FROM A LARGE LOG AT THE UNIT SAWMILL. IDENTIFIED PERSONNEL ARE: - NX163574 SAPPER G.D. BROWNE (1); WX2758 STAFF SERGEANT W.A. COLLINS (2); QX56027 SAPPER H. EDWARDS

Bougainville – Australian Forestry Unit sawmill in operation with band saw

BOUGAINVILLE ISLAND, 1944-11-17. THE SAWMILL, OF THE 2/2ND FORESTRY COMPANY. IDENTIFIED PERSONNEL IS: - VX90808 SAPPER M.F. CONDRON (2).

John Henry (Jack) Meagher from Karragullen driving a bulldozer in Torokina Bougainville. Photo credit Australian War Memorial.

Sawing logs in New Britain presumably at Jacquinot Bay Photo Credit Aust War Memorial.

AUSTRALIAN WAR MEMORIAL 077408

CAPE CUNNINGHAM, NEW BRITAIN. 1944-11-29. SAWN TIMBER BEING LOADED ABOARD A LANDING BARGE BY PERSONNEL OF THE 2/2ND FORESTRY UNIT.

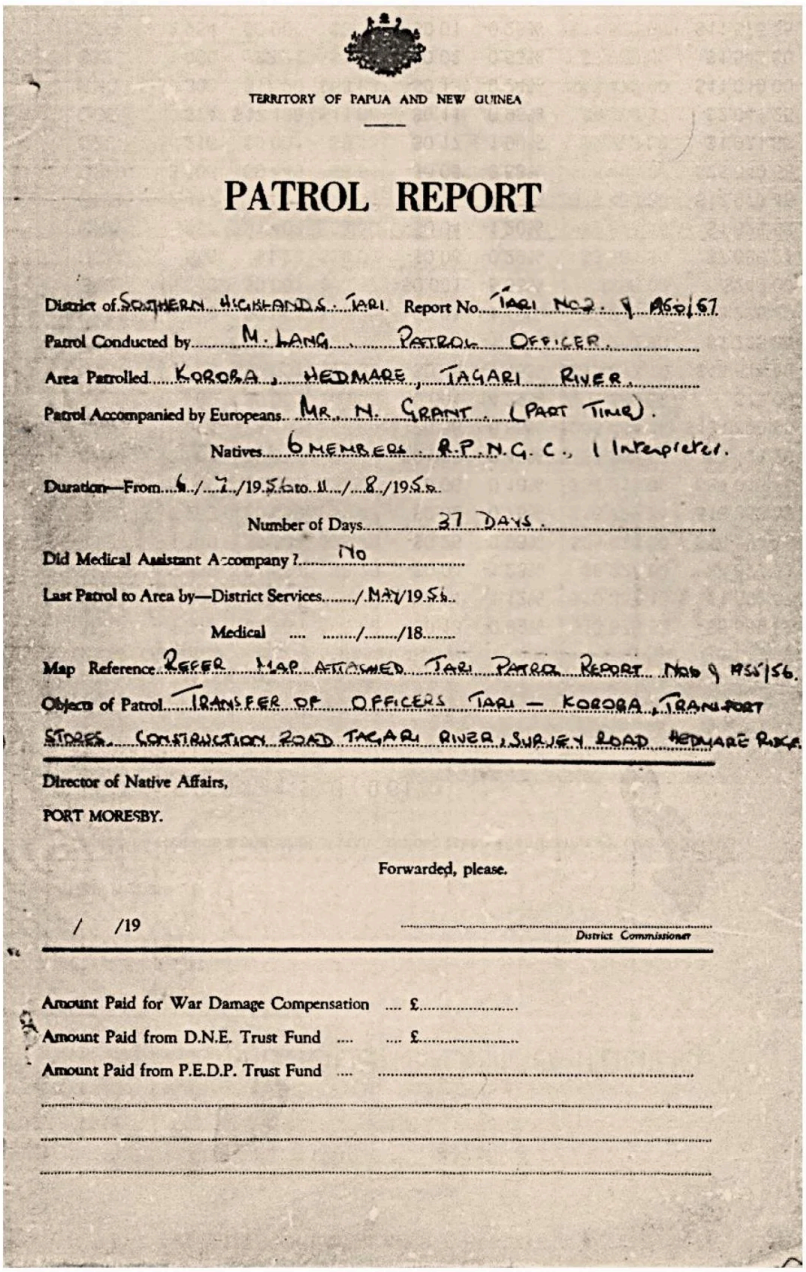
AUSTRALIAN WAR MEMORIAL 084330 **CAPE CUNNINGHAM, NEW BRITAIN, 1944-12-16. THE 2/2 FORESTRY COY SAWMILL LOCATED IN A HEAVILY TIMBERED AREA AT CAPE CUNNINGHAM NORTH.**

AUSTRALIAN WAR MEMORIAL 084335

CAPE CUNNINGHAM, NEW BRITAIN, 1944-12-16. SAPPER A W HEYWOOD, 2/2 FORESTRY COY, ASSISTS MANAM ISLAND NATIVES AS THEY ROLL LOGS TO THE SAW BENCH.

AUSTRALIAN WAR MEMORIAL 084332 **Cape CUNNINGHAM, NEW BRITAIN, 1944-12-16. NATIVES FROM MANAM ISLAND AT THE 2/2 FORESTRY COY SAWMILL STACKING SAWN TIMBER ON A TRAILER. Photo credit Australian War Memorial**

In a paper presented to the Fifth National Conference on Australian Forest History[54] by Judith A. Bennett, Department of History, University of Otago, New Zealand titled "*Allied logging and milling in Papua New Guinea during World War 11* describes in some detail following the war, the compensation program undertaken by McAdam and his officers between 1947 and 1960, paying customary owners for the timbers harvested during the war.



TERRITORY OF PAPUA AND NEW GUINEA

PATROL REPORT

District of SOUTHERN HIGHLANDS. TARI. Report No. TARI No 2. 9 1956/57

Patrol Conducted by M. LANG. PATROL OFFICER.

Area Patrolled KOROBA, HEDMARE, TAGARI RIVER.

Patrol Accompanied by Europeans. MR. N. GRANT. (PART TIME).

Natives 6 MEMBERS R.P.N.G.C., 1 Interpreter.

Duration—From 6./7./1956 to 11./8./1956.

Number of Days 37 DAYS.

Did Medical Assistant Accompany? No

Last Patrol to Area by—District Services ...../MAY/1956.

Medical ..../...../18.....

Map Reference REFER MAP ATTACHED TARI PATROL REPORT No 9 1956/56.

Objects of Patrol TRANSFER OF OFFICERS TARI – KOROBA, TRANSPORT STORES. CONSTRUCTION ROAD TAGARI RIVER, SURVEY ROAD HEDMARE RIVER

Director of Native Affairs,

PORT MORESBY.

Forwarded, please.

/ /19 .....

District Commissioner

Amount Paid for War Damage Compensation .... £.....

Amount Paid from D.N.E. Trust Fund .... £.....

Amount Paid from P.E.D.P. Trust Fund ....

[55]Note the format for TPNG patrol reports included a section on war damage compensation for applicable customary owners.

[54] Fifth National Conference on Australian Forest History edited by John Dargavel, Denise Gaughwin and Brenda Libbis in 2002 ISBN 0867405309

[55] https://library.ucsd.edu/dc/object/bb9046273d/_1.pdf

1946 WAR EFFORT REBUILDING – *Sawn Timber*

At the end of the war, as far as can be ascertained, some 80 odd million super feet of sawn timber had been produced by these units. In addition, the forests had yielded thousands of pieces of round timbers for escarpments, corduroy, bridge timbers, telephone poles, firewood, and the many other needs of a vast army. It was roughly estimated that this effort had saved two million pounds worth of Australian timber and over three quarters of a million pounds worth of shipping space. Figures, of course, would be very much higher at present day prices.

The cessation of hostilities in 1945 found that all the towns, with exception of Port Moresby, in ruins. Salamaua, Lae, Rabaul, and Madang were destroyed. Given the demand for timber in Australia and the scarcity of shipping space, it was necessary that the bulk of timber required for reconstruction be produced locally.

Rabaul after capture 1945.

Much damage caused by allied bombing Oct 1945.

Photo credit Australian War Memorial

This devastation, coupled with a revised policy of economic development, created an immediate need for sawn and seasoned timber. To facilitate the rapid rebuilding of the major towns, the Provisional Administration established and operated through the TPNG Department of Forests, sawmills using war surplus equipment and staffed largely by personnel recruited from the wartime Army Forestry Units. [56]

Two war-time sawmills at Kerevat and Yalu sawmill near Lae were taken over by the Administration and operated by the Department to supply sawn timber and to acquire information on local timbers which would be of practical benefit in the development of a local commercial timber industry. One sawmill closed in 1960 and the other in 1961.

By 1952, the local sawmilling industry had reached the stage where it was able to meet the local demand i.e., mill output around 24 thousand cubic metres per annum.

[56] J B McAdam 1952:" Forestry *in New Guinea*" Paper to Papua & New Guinea Scientific Society's Annual Report

1946 -1955 TPNG Forests Yalu Sawmill

Yalu[57] had no houses after the war and these houses were built from scratch with timber from the local area. 4-5 houses and a singles quarter. TPNG Dept of Forests Housing Yalu after World War 2.

Photo credit Cheryl/Norma Collis 1946.

1946 TPNG Dept of Forests Sawmill crew Yalu after World War 2. Although unclear personnel included Ted Collis, Alan and Ken Fraser, Col Pittaway, John Thompson, Eric Dobson, Bill Jenkin, George Barrcroft, Darby Munro.

Photo credit Cheryl/Norma Collis.

Yalu ex WW 2 Forestry TPNG Forestry staff included:

Ted Collis during World War 2, Ted served as a corporal in the 2/1 Australian Forestry Company. In 1946, Ted was approached by Jim McAdam to go back to New Guinea to help rebuild Lae. Ted said *"no way not going back to that place*" but was persuaded when he knew other army mates were going.

He ended up in Yalu 20 miles out of Lae at a sawmill. The only army mates that Norma Collis recalls were George Barrcroft, Darby Munroe, Alan and Ken Fraser, John Thompson, Eric Dobson, Col Pittaway, and Bill Jenkins. Yalu had no houses, and these were built from scratch

[57] Personal communication Cheryl and Norma Collis

with the timber from the local area. 5-6 houses were built and a singles quarter. When the mill closed in Yalu in 1955, everyone moved to Lae to a new mill.

The Lae government sawmill[58] became beset with problems and was placed under regional control. The main problem was the lack of logs, but with the aid of a few young field officers and a great deal of enthusiasm by mill workers, additional resources were found, designed roads to tap them and make the mill profitable. This, however proved the mill's undoing as it became competitive with private industry and in accord with policy of the day it was closed. It was converted into the Transport Department garage and later to the Lae Produce Market. Its staff and equipment were dispersed through the department. Many of the staff stayed with the Department in Lae, Bulolo and Port Moresby. Ted chose Bulolo where he was put in charge of the nursery responsible for a million and quarter pine –klinkii and hoop-trees to be planted out in the plantation every year.

L to R Dick McCarthy, Ted Collis and Kevin White Mid 1970's Bulolo Plantations. Photo credit John Davidson.

Col Pittaway was an NSW VDC man discharged in December 1943 when only 18. After World War 2, he worked at the sawmill at Yalu.

George Henry Barrcroft enlisted on 9 April 1941. He was a sapper in 2/3 Forestry Coy. He was discharged on 27th October 1945.After World War 2, he worked at the sawmill at Yalu.

Bill Jenkin arrived in PNG in October 1949 after four years serving with BCOF Occupation Force in Japan to the sawmill at Yalu as a tractor operator/Mechanic. 1951 when he left to serve in Korea. 1953, he returned to PNG working as a forest ranger, District Forester, then Harvesting and Marketing Officer in Port Moresby. He studied accounting, 1968 joined the Transport Department TPNG., December 1975 he moved to Tasmania, working as an accountant until retirement in 1994.

Ken Fraser enlisted on 23 May 1942 in Adelaide and discharged on 5 October 1945.He was a corporal with RAAF at Air Defence HQ Port Moresby. After WW2, he was at Yalu sawmill and then as a forest ranger.

Alan Fraser enlisted on 25 May 1940 at Maryborough and was discharged on 27 July 1945. He was a private and prisoner of war in Germany. In NG, he was in the 2/15 Infantry Battalion. After WW2 he was at Yalu sawmill and then technical officer and OIC at Kerevat plantations and then moved to Bulolo plantations.

[58] Reference PNGAF Mag # 9B-5B4M2 of 27th July 2021 Eminent TPNG forester Don McIntosh.

1946 - 1961[59]. Kerevat Sawmill New Britain

Jim Cavanaugh visited New Guinea in 1938 and joined the New Guinea Public Service in 1940. In 1941, he enlisted and served - first with the New Guinea Volunteer Riflemen (NGVR) and later with the 2nd Australian Forest Survey Company. He also conducted intelligence work with the Central Bureau. He spent almost all the war years outside Australia often behind Japanese lines. He was a commissioned officer and was demobilised in December 1945.

Linda Cavanaugh Manning reported that in January 1946, Jim returned to Papua New Guinea as a forester and was put in charge of the Northern Region. He was based in Kerevat near Rabaul, and he set himself the task of getting the sawmill at Kerevat working to produce timber to rebuild the town of Rabaul after the ravages of the war. When he needed engines and gearboxes, Jim converted abandoned Japanese motors and gearboxes to power the mill. He initially ran a team of Chinese labourers that had been abandoned in Rabaul by the Japanese army and later a team of Papuan New Guineans. Pat, his wife, did the books.

#1 Derelict Kerevat Sawmill as at 1967-68. # 14 Remnants of the old sawdust heap from the mill.

Photo credit J D Davidson.

[60]Don McIntosh reported that in 1952 his first posting was Kerevat where his main task was to establish plantations of teak and kamarere in the wake of the government sawmill logging. The sawmill manager was Ted Roach, who supplied most of the timber needs of Rabaul until the early 1960's when the task was taken over by private concerns such as Gazelle Timber Co. and Nonga sawmills. The government mill became a research and training unit.

Another Kerevat sawmill manager was Dick Reilly who enlisted on 20 April 1941 and was a sapper with 3 Forestry Coy. He was discharged on 26th April 1944.

[59] Ref: PNGAF Mag # 3 of 3/11/20 p 73, 103

[60] Reference PNGAF Mag # 9B-5B4M2 of 27th July 2021 Eminent TPNG forester Don McIntosh.

[61]Peter Eddowes recalled in 1961 at Kerevat that he worked with Dick Riley, Ken Skyring and John Smith, (not the forester) who helped to skill him in the operations of the machinery as well as tree/log identification. These men were hard, tough Bushmen, with Dick hailing from the timber area of Dorrigo in NSW where he did the hard yards in felling of trees with an axe, and then, the cutting and adzing to size, of hardwood sleepers. Ken was from the forest area of Gympie where he worked in logging and roadbuilding. Les Austin ran the machinery workshop, and Arthur Mobbs and Norm Hillary (Saw Doctor), who managed and ran the Government forestry sawmill.

The logs that were felled were sold to the local saw millers in Rabaul incl., Ben Cheong, Dick Gault and, then there was Jack Chipper,' the so-called Lord Mayor of Rabaul. ***Who was this guy (Jack Chipper) that had the audacity to drive around the small township of Rabaul in a bloody 'gold' Rolls Royce"?***

Part of old sawmill 1995.

Photo credit Dick McCarthy.

Foreground balsa logs.

Background depository of used government vehicles.

Kerevat Sawmill 1946 Pat Cavanaugh standing near one of the stacks of sawn timber.

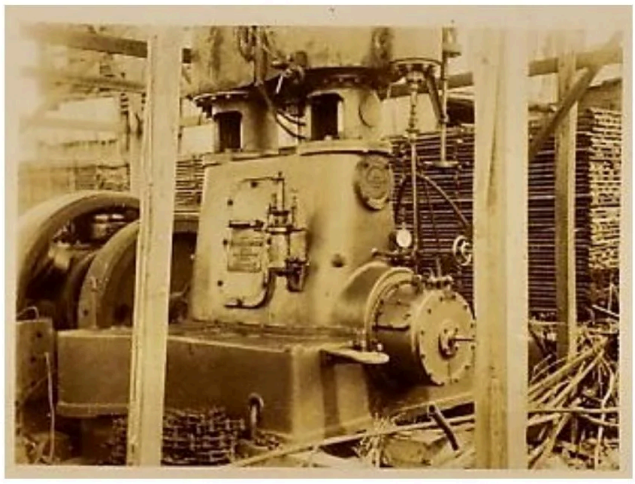
Photo credit Linda Cavanaugh Manning

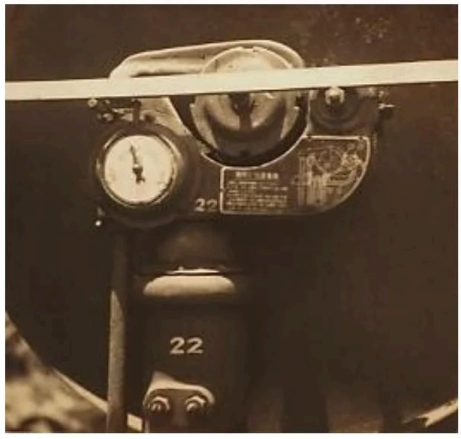
[61] Forthcoming publication re eminent TPNG Forester/wood technologist late Peter Eddowes *Reflections of past times in PNG Forestry* submitted 27/6/2018.

One of the saws in Kerevat Sawmill 1946. Photo credit Linda Cavanaugh Manning

Part of the sawmill equipment Kerevat Sawmill 1946.

Photo credit Linda Cavanaugh Manning.



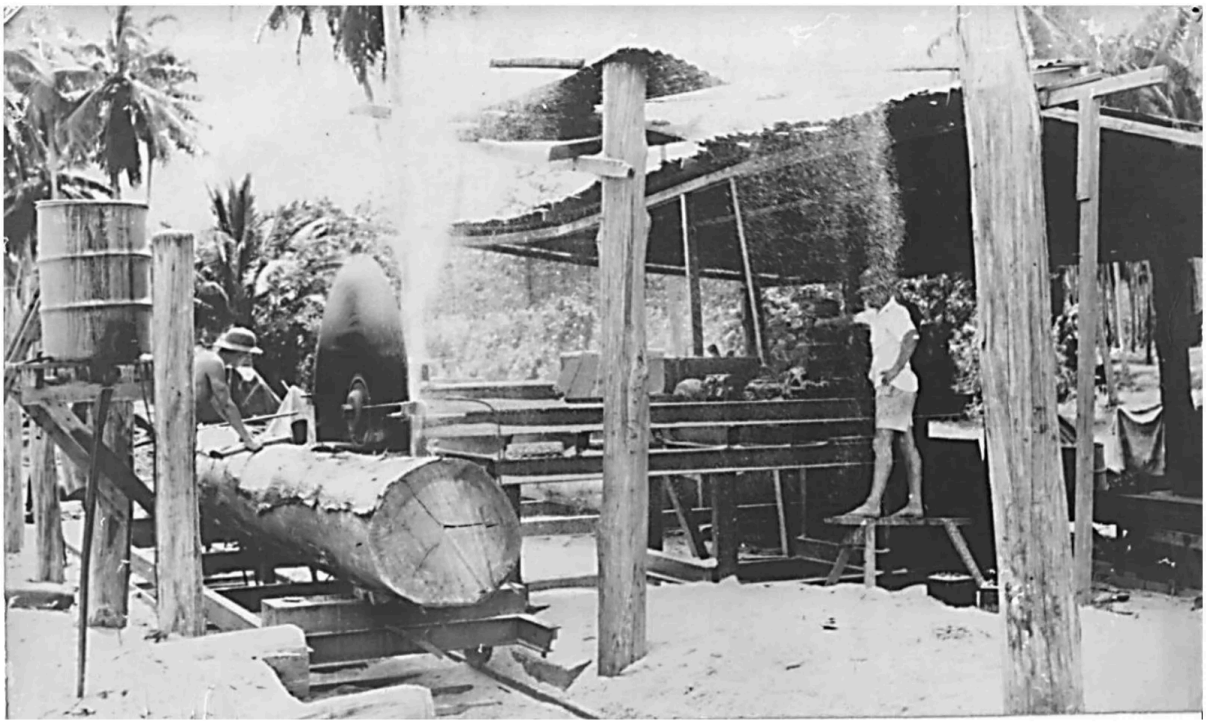


Jim and Pat Cavanaugh's retirement from Dept of Forests in 1972. Director Don McIntosh is standing behind Pat.

Photo Credit Linda Cavanaugh Manning.

1946. NUMA NUMA SAWMILL Bougainville.

This sawmill operated just out of Numa Numa on east coast Bougainville after WW2. **Source OIES dated 1960s. Michael Pearson.**



1947 Research Work CSIR in Forestry & Forest Products Australia/ PNG [62]

New Guinea Timbers. *- Acting in close co-operation with the New Guinea Forests Department, the Division proposes to continue and extend the work on the examination of physical and mechanical properties of New Guinea timbers.* ***Wood Structure Section.*** *- This Section has made a comprehensive study of the macroscopic and microscopic characteristics of Australian timbers and has applied the results of its work to identification keys on the one hand and to certain features of investigation of other sections on the other. During World War II, card-sorting keys developed for the timbers of the Pacific Islands were of considerable aid to the Allied forces fighting in that zone.* ***Wood Chemistry Section.*** *– continues the work of the pulp and paper investigations initiated by the old Forest Products Laboratory.* ***Timber Physics Section***. *- fundamental research into the physical properties of timber.* ***Timber Mechanics Section***. *- mechanical properties of various Australian timbers, bending properties of Australian timbers, projects designed to meet the need of materials for housing.* ***Seasoning Section.*** *– Major activity developing a high standard of kiln drying in Australia.* ***Preservation Section.*** *- field tests of poles, sleepers, and fence posts treated with various preservatives; responsible for the boric acid treatment of lyctus-susceptible timbers.* ***Veneer and Gluing Section***. *- Assistance in the peeling, drying, and gluing of Australian timbers. Work on adhesives* ***Utilization Section.***

Update 2018 re CSIRO/PNG Wood Research by the late Peter Eddowes[63]

Peter Eddowes in 1965 spent a period three months, at CSIRO, to study the wood anatomy of timbers, under the tutelage of Bob Ingle (Wood Anatomist). Peter had been working in close association with Bob since the collection of materials started for testing by CSIRO. During this period, Bob would receive, from Eddowes, small wood blocks of duplicate wood material from the (authentic) 'NGF' series, of wood collections. From these wood samples, Bob then prepared a full collection of microscopic slides which were invaluable in the support identification and authenticity, of the wood material as collected for testing by CSIRO.

Peter Eddowes advised that PNG relied heavily upon local sawmills to mill the wood samples, as collected in their area, for ongoing research purposes, and in the cutting of the flitches of the collected (authentic) materials for consignment to the CSIRO in Melbourne. Sawmillers included Jack Lindquist (Amplex / New Britain, Golden Pines / Bulolo, Wau sawmills), Vince Sanders (Brown River), Bill McLellan (Lae), Jack Eustice (Oriomo), Ed Fitzgerald (Madang), Bert Counsel (Ihu / Gulf), Bill Bailey (Open Bay / New Britain), Simon Hirata (Stettin Bay / New Britain), Jack Thick (Lufa / Goroka), Don Neate (Woodlark Island), Ron Neville (Mendi), and the Stewardson brothers (Normanby Island/ Milne Bay).

Peter Eddowes advised that in the period (1961-1975) they achieved their goals in the collection of materials, to determine both the physical and mechanical properties of the major timber species. The team of John Colwell, Greg McDonald, Barry Hartwell, Maru Kumul and Peter Eddowes, together with the members of the Division of Building Research CSIRO, including Nora Bolza, Bob Ingle, Bill Keating et al, was responsible for establishing a true record for the properties and potential uses for the major commercial timber species of Papua New Guinea.

---

[62] *Extracts article by G Rodger Unasylva Vol 1 # 3 Nov-Dec 1947 FAO.*

[63] Forthcoming publication re eminent TPNG Forester/wood technologist late Peter Eddowes *Reflections of past times in PNG Forestry* submitted 27/6/2018.

1947 Bill Heather[64] TPNG Forests 1947-1955

AFS Class 1943-1944. L to R. Dick Woods (SA) awarded Schlich Medal, Alan McArthur (NSW), Bill Hindmarsh (NSW), Bill Heather (NSW), Hugh Bell (NSW).

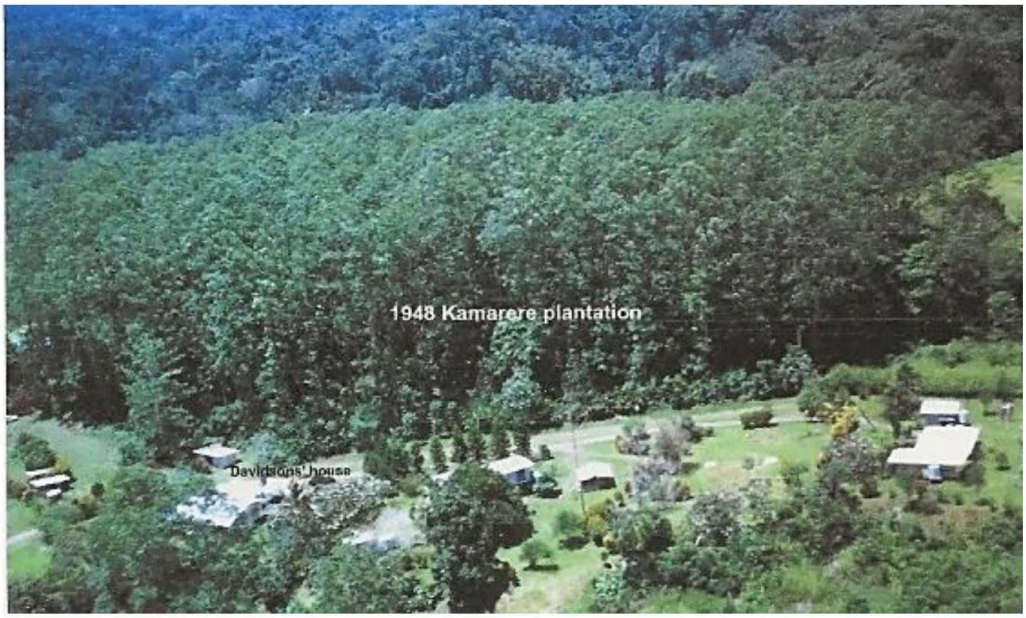
Source ANU AFS archives.

Bill Heather was born in Ashfield NSW in 1923 and died in 2004.[65] He graduated from AFS in 1944.

Bill Heather (TPNG Forests 1947-1955) was a Regional Forest Officer at Rabaul New Britain in the late 1940's and early 1950's in Papua New Guinea. He and forest ranger W R Fryar started the Kerevat Forest plantation program with Eucalyptus deglupta *(Kamarere*) at Kerevat New Britain in 1948. [66]

Donald Fryar service number - SX2836: born in 1919 in Adelaide SA. He enlisted at Wayville SA. He was a forest ranger Kerevat until killed in the late 40's/early 50's. in an accident on the Kerevat River Bridge. Fryar logging area in Kerevat is his legacy.

Bill heather undertook plant collections from Sogeri (Papua) and New Britain in the NGF series (CF New Guinea Forces Lae after 1945.)



1948 *E deglupta* (Kamarere) Kerevat ENB planted by Bill Heather.

Photo credit John Davidson 1972.

[64] Reference PNGAF Mag # 9B-5B4H5 eminent TPNG Forester Bill Heather 25th July 2022

[65] Heather, William Gungahlin, Wednesday, December 29, 2004, Saturday, June 2, 2007, PB-08-05-00-314

[66] John Davidson personal communication.

In 1955 Bill Heather published Heather, W. A. (1955). *The Kamarere (Eucalyptus deglupta) forests of New Britain*[67]. This paper descibed the environmental conditions under which *E deglupta* occurs naturally in New Britain. Silvicultural characteristics and requirements of the species are outlined. A silvicultural system and policy of management are proposed. Information on growth, yield, major properties and uses of the timber is summarised.

After service in PNG, Bill Heather became lecturer in forest pathology, wood science (technology) and Silviculture at the Australian Forestry School.

Bill Heather's thesis in 1965 for his Ph.D. was on:
Some aspects of the ecology and pathology of phaeoseptoria eucalypti Hans. emend. Walker on some species of the genus eucalyptus.
Heather, William Aloysius
Keywords: Eucalyptus - Diseases and pests.; Eucalyptus.; Leaves - Diseases and pests. on some species of the genus eucalyptus / W.A. Heather. Some aspects ...Online at https://openresearch-repository.anu.edu.au/handle/1885/142333

Of interest is the reporting[68] of Bill's wedding to Norma Foster in 1951 in Narrandera.

St. Mel's Church, Narrandera, was beautifully decorated on 2nd June for the marriage of Norma Aileen Foster, third daughter of Mr. and Mrs W. Foster, of Narrandera, and William A. Heather, eldest son of the late Mr. W. Heather, and Mrs. A. G. Heather, of Strathfield. The Rev. Father McVeigh, P.P., assisted by the Rev. Father Stempter, M.S.C., of Viamona, New Britain, officiated at the Nuptial Mass

On the 16th of June they sailed on the 'Bulolo' for Rabaul, their future homeland. A week previously the bridegroom's mother sailed for Rome to attend the ordination of her youngest son.

TPNG's MAIL BOAT

HMS Bulolo was a 6,267-ton passenger and cargo ship of the Burns, Philp Shipping Company operating in the South Pacific. Her shipping route was Route Mail service from Australia to PNG including Solomon Islands, New Hebrides, Norfolk, and Lord Howe Islands.

Source Wikipedia.

[67] Heather, W. A. (1955). *The Kamarere (Eucalyptus deglupta) forests of New Britain*[67]. Empire Forestry Review, 34: 255-278.vol 3
[68] **http://nla.gov.au/nla.news-article101621436**

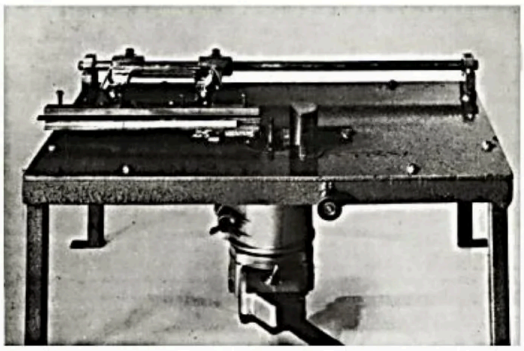
ANU Department of Forestry 1969. John Davidson (fourth from left back row), Bill Heather (third from right, middle row.)

Photo credit John Davidson.

[69] John Davidson's Wood Density Researchon *E deglupta.* Part of his Ph.D studies.

Density of the wood of E. deglupta

The wood samples had arrived by air from Keravat. Part of each of the large samples was thinned down to produce cambium to pith samples to the precise thickness dimension of 6.9 mm in the longitudinal direction for x-raying. This was carried out using a Black and Decker router modified in the Forestry Department engineering workshop to work as a spindle moulder a with tungsten carbide tipped cutter.



Modified router used for preparing bark to pith samples of a precise thickness in the longitudinal direction (6.9 mm for *E. deglupta*). Note: For the photograph, the semicircular safety guard has been detached and moved to the right to show the tungsten carbide tipped cutter. The sample was held tangentially in the long clamp on the left, which travelled past the cutter from left to right, precisely guided by the rail at the rear. The sample was machined on both the upper and lower sides with respect to the original orientation in the living tree. Thickness was checked after each pass using a G-shaped micrometer screw gauge.

Before and after thicknessing, the wood samples were conditioned in a closed container over a saturated solution of sodium dichromate, which had a relatively constant aqueous vapour pressure at ambient

4

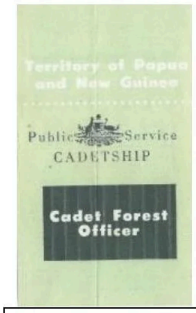
temperatures leading to an equilibrium moisture content in the wood of 8±0.5%. Wood kept indoors in Canberra also was normally close to 8% equilibrium moisture content so there was virtually no change in the wood sample thickness during the machining operation or later during the short time the samples were removed from the sealed container to be placed on the x-ray film and exposed.

Above: Typical block of wood about 10 cm thick received from Keravat. It had been cut with a chainsaw from a full cross-sectional disk at Keravat to reduce its weight, while still retaining a substantial sample from bark to pith, originally oriented in the North cardinal direction (or four samples from the four cardinal directions for the breast height disk).

Left: John operating the Joyce Loebl double-beam recording microdensitometer scanning the x-ray films of wood samples on a moving table (front) to determine the density across the image and recording this scan on graph paper on a second moving table (rear).

A positive black and white photographic print taken from an x-ray film of the wood sample for "KT5" (Kamarere Tree 5) at "B" (Breast Height). The sample is from one North oriented horizontal radius with the sapwood "S" direction to the left and the pith "P" direction to the right, but has been cut in half to fit on the x-ray film. Here the cambium is at the left hand end of the top image and the pith is at the right hand tip of the lower image. The darker the tone on this print, the higher is the wood density, whereas on the x-ray film from which this print was made lighter areas indicated higher density. "Growth rings" are evident, but in *E. deglupta* these are not seasonal or annual growth rings in the usual sense but rather indicate the tree's varying rate of growth in response to the prevailing environmental conditions (for example, soil moisture) at the time the wood was being laid down. The image here is about natural size (radius 27 cm).

[69] Reference PNGAF Mag # 9B-5B4D3 of18th Aug 2022 Eminent TPNG Forester John Davidson 1962-1980.



1948-1963 AUSTRALIAN TPNG FORESTER CADETSHIP SCHEME

After the Second World War, a cadetship scheme was undertaken by the Australian Department of Territories to train Australian Forest Scientists to ensure sufficient professional staff for the purposes of creating a functional Forest Department for TPNG

Surname	Positions	TPNG Cadetship	AFS	Year graduation
Edward Charles Gordon Gray (NG)		1948	1950/51	1952
Alexander John Hart (NG)		1946	1950/51	1952
Donald Henry McIntosh (NG)		1946	1950/51	1952
Kevin Joseph White (Q)		Qld	1950/51	1952
Robin Levingston (NSW)			1952/53	1954
Jaroslav Joseph Havel (WA)		1953	1953/54	1955
Robin Bilbrough Morwood (NG)		1952	1955/56	1957
Frank Harry Coppock (NG)		1953	1956/57	1958
Elliot Carby Tuckwell (NG)		1953	1956/57	1958
John Godlee (NG)		1954	1957/58	1959
Ian Grundy (NG)		1955	1958/59	1960
Eric Hammermaster (Q/NG)		1955	1958/59	1960
Des Harries (NG)		1955	1958/59	1960
Gerry Vickers (NG)		1955	1958/59	1960
Alan Cameron (Q)		1956	1959/60	1961
John Smith (NG)		1956	1959/60	1961
Brian O'Hagen (NG)		1956	1959/60	1961
Neil Brightwell (NSW)		1960	1960/61	1962
Alan White (NG)		1960	1960/61	1962
Leon Clifford (NSW)		1958	1961/62	1963
Evan Shield (NG)		1958	1961/62	1963
John Lake (NG)			1962/63	1964
Ian Currie (NG)			1963/64	1965
John Harrison (NG) Medi vac out	Last field year	1961	1964/65	1966
Chris Borough (NG) field year	for cadets	1960	1964/65	1966
Bob Bruce (NG) no field year		1961	1964/65	1966
Rex Grattidge (NG) no field year		1961	1964/65	1966
John Davidson (NG)		1962	1965/66	1967
Paul Ryan (NG)		1962	1965/66	1967
Rod Holesgrove (NG)		1963	1965/66	1967
Jim Belford (C)		1966	1966/67	1968
Dick McCarthy (NG)		1963	1966/67	1968
Dave Num (C)		1965	1966/67	1968
Bob (R G) Lyons (NG)		1965	1966/67	1968
Gary Archer (NG)		1966	1967/68	1969
Chris Done (NG)		1966	1967/68	1969
Ken Hart (NG)		1963	1967/68	1969
Ian Whyte (C)		1966	1967/68	1969

Footnotes. TPNG Territory of Papua New Guinea; NG New Guinea, Q – Qld. WA – Western Australia; NSW New South Wales; C Commonwealth. AFS Australian Forestry School; BFC - Bulolo Forestry College

1948 FAO PNG[70]

FAO reported on forestry in the territories as under the administration of the Department of Forests of the Territories in conjunction with the Commonwealth Forestry and Timber Bureau of Australia. They have a land area of over 46 million hectares (115 million acres) about equally divided between Papua and New Guinea. Together they are 60 to 70 percent forested. The population is in the neighbourhood of a million. Forest types include the lowland rain forest from sea level up to about 700 meters (2,000 ft.) elevation. The midmountain forest consists of Araucaria and oak; and the mossy forest at 2,300 to 3,500 meters (7,000 to 11,000 ft.) elevation is composed of Nothofagus, Phyllocladus, Dacrydium, Libocedrus, and Podocarpus. There are also some swamp forests and savannah types of little economic value except for mangrove. The lowland rain forest resembles the mixed dipterocarps of Indonesia, the Philippines, Indochina, and Malaya. The Araucaria resembles that of north-eastern Australia, and the mossy forest is similar to the indigenous type of New Zealand. The ownership of forest land remains with the inhabitants either as individuals or as village groups. Government ownership must be obtained through purchase from the inhabitants before territorial forest reserves can be established.

There has been extensive coverage of the territories by aerial photographs taken during the war. There has also been considerable botanical collection and classification work by the Australian Forest Products Laboratory of the Council for Scientific and Industrial Research at Melbourne, and by the State botanist of Queensland in Australia. There are, however, only very rough estimates of the volume of timber in the territories. Such estimates place the rain forests at 38 to 114 m^3 log volume per hectare (640 to 1,630 cu. ft. per acre) and the Araucaria-oak forest is said to carry about 1.1 million m^3 (40 million cu. ft.) over a total area of 15,000 hectares (37,000 acres). During the war, U. S. Army sawmills produced considerable quantities of lumber. There are now 11 sawmills operating which in 1947 produced about 21,000 m^3 (740,000 cu. ft.) of lumber. The Australian government operates a sawmill to train local sawyers and some skilled labourers. As production expands, Australia hopes to meet not only the present annual requirements of the territories, but to obtain considerable quantities of hardwoods for Commonwealth use. Although pre-war annual consumption of timber in the territories was not great, it is estimated that rehabilitation requirements will need almost 23,600 m^3 (830,000 cu. ft.) a year for the next five or six years. Minor forest products include sago from the Metroxylon palm, nipa palm leaves for thatching, mangrove bark for tannin, dammar gum, canes, and bamboos.

Among the problems facing any forestry program in the territories, one of the most urgent is the control of shifting cultivation. Territorial forest reservations will have to be made to meet local demands and expanded export industries. A comprehensive inventory should be made, taking advantage of the excellent aerial photographs that are available. It will be necessary to secure trained foresters, and such training is being provided at the Australian Forestry School at Canberra. Plans are under way for a research program in silviculture through the Commonwealth Forestry and Timber Bureau, and in products through the C.S.I.R. at Melbourne.

[70] FAO in Unasylva Vol 2 # 6 1948 *New Guinea and Papua*

1949 ECONOMIC DEVELOPMENT PNG – *Potential of Wood Fibre*

The potential of tropical hardwoods as a source of raw material for cellulose fibre has been recognised for many years. Commercial utilisation has been low in development especially for the technical problems involved with pulping such a mixture of tropical woods given the range of diverse properties which is characteristic of the tropical hardwood forest.

Cutch in PNG

Efforts to evaluate this type of forest resource for pulp and paper manufacture commenced in 1949. The impetus at this time was given by the commencement of a tannin extracting industry based on the mangrove forests of the Gulf of Papua, which threatened to lead to waste, vast quantities of timber following commercial stripping of the bark.

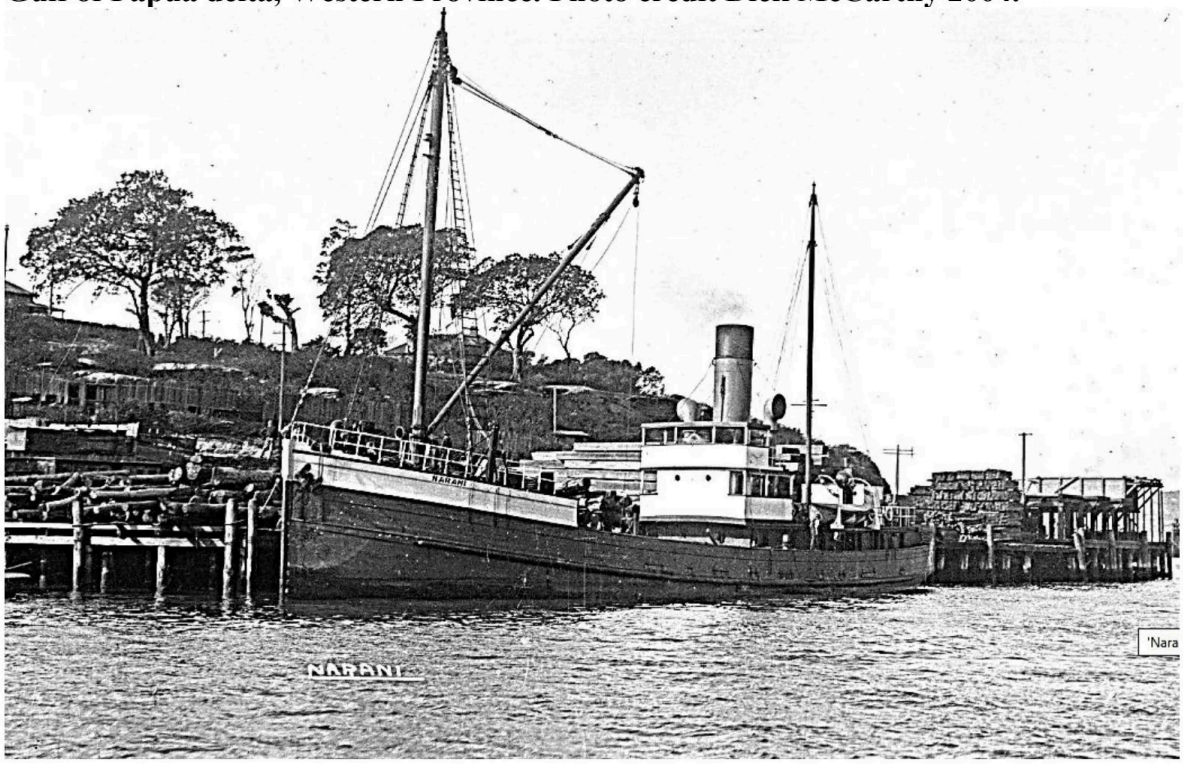
The bark extract, which is called cutch, is used to dye materials khaki and to preserve fishing nets. The bark extract, then made from a type of wattle in India, was used to colour British military uniforms khaki last century after the War Office had decided that the resplendent redcoats were too easily spotted by the enemy.

Cutch Factory, Aird Hills, Papuan Gulf. The steamer 'Narani' was used to transport processed cutch to Port Moresby in the early 1950s. Photo credit National Library of Australia

Perome is a small village near Aird Hills on the Delta of the Kikori River. Most of the Delta area is a flood plain largely supporting Sago Palm. Aird Hills is close to the Gulf of Papua

and deep-water access to the volcanic hills. It is these conditions that allow mangroves to flourish.

Gulf of Papua delta, Western Province. Photo credit Dick McCarthy 2004.



Wooden steamer Narani at Goat Island. Source Dufty Collection (Courtesy Graeme Andrews). GLMRSNSW (Great Lakes Manning River Shipping NSW).

Narani was build by E Wright Tuncurry NSW. It was used as a auxilary minesweeper during WW2. (deleted from Lloyd's register in 1955).

In 1951 *Narani* was sold to the New Guinea Borneo Mangrove Company and taken to Aird Hills in the Kikori River Delta, Papua. Her role was to transport cutch (bark harvested and processed) from mangrove trees Port Moresby. The cutch factory had a railway line to transport bark to the processing plant and processed cutch back to the *Narani.* In 1951 the *Narani* was purchased by the New Guinea Borneo Mangrove Co., Port Moresby.

The Australian Women's Weekly Wednesday 27 June 1951 published this account: "*English couple Charles and Phyllis Cook left Sydney in the old N.S.W. coaster Narani recently, counting the days till they are back in the jungle. Mr. and Mrs. Cook are on their way to a river delta at Perome, 300 miles from Port Moresby, in Papua, where they will establish a factory to make a bark extract from native trees. The Cooks like jungle life. Before coming to Sydney, where their ship took on six months' supplies and equipment, they lived in Borneo. In Borneo Mr. Cook was managing a factory producing bark extract, which is called cutch, and is used to dye materials khaki and to preserve fishing nets. The bark extract, then made from a type of wattle in India, was used to colour British military uniforms khaki last century after the War Office had decided that the resplendent redcoats were too easily spotted by the enemy. Mr. Cook will use mangrove bark to make the extract in his Papuan factory. It is claimed that this type of bark produces the best dye."*

Michael Pearson[71] described PNG's Great Train Robbery: "The Borneo New Guinea Mangrove Company established a pioneer factory in the swamps of the Kikori River Delta at Aird Hills to extract cutch (a tanning fluid from mangrove bark). A short tramline (about 1300 metres) was built from the wharf to the factory. It carried firewood and the bark inwards, and cutch out for shipment. There was a small IC-engined locomotive which hauled flat trucks and hopper wagons over the line. By 1958 the venture had failed, and the equipment was abandoned. Mr. Keith Tetley, a local trader, collected rails to build a wharf and copra drier.

Steamships Trading Company (STC) eventually purchased the assets of the Borneo New Guinea Mangrove Company from receivers with the intention of using them at their Baimuru Sawmill.

On arrival to collect their bounty, STC crews discovered the disappearance of the railway equipment.

The company (STC) took Mr Tetley to court, thus commencing the case of PNG's Great Railway Robbery. Mr Tetley eventually won the case as there was no caretaker at the site and the rails were not on land belonging to the company, and therefore, they could be considered abandoned.

He is reported to have arrived at the Kerema Hall for the annual Christmas party pulling a toy train, much to the delight of those present. STC lost out badly, not only losing the rails and the money paid for them but also having to pay court costs.

[71] Pearson M, McKillop B "End of the Line" A history of railways in Paua New Guinea UPNG Press 1997

1952 TPNG Wood Industry Status - Jim McAdam MM 1952.

Part of his Presidential address to PNG Scientific Society[72].

In the period from European contact and settlement in the late nineteenth century to the end of World War 11, the timber industry was concerned mainly with speculative exploitation and reconnaissance. The utilization of the forests was mostly incidental to other activities like gold mining. Only ten sawmills were operating supplying local mission or company needs, with any surplus being sold for use in the small public and private building programmes. The only other trade was speculative exploitation of selected species as sandalwood (Santalum macgregorii) from around Port Moresby and New Guinea Walnut (Dracontomelum mangiferum) from New Britain and New Ireland.

In New Guinea, there was a sudden interest in log export in 1937, which caused the Administration to revise its legislation and consider the establishment of a forest service. In that territory, there was a mill at Waterfall Bay and mission mills also at Finschhafen, Alexishafen and Marienberg. Mills had also started at Bulolo and Wau, having been flown in from the coast. Sawn and milled timber, however, was still being imported from Australia and the Philippines to Rabaul when McAdam arrived in New Guinea in 1938 to initiate the new Forest Service. From its inception shortly afterwards until 1942, the one mill established in Rabaul led a precarious existence. However, under the stimulus of a depressed copra market and an active interest by American buyers in New Guinea walnut, many planters in New Britain and New Ireland commenced harvesting logs. In 1940/41, exports in logs and flitches of this species reached about seven and a half million super feet.

There were various attempts to establish sawmilling operations in Papua. The most tenacious of these was the Port Romilly venture and that, with Kwato Mission sawmill and the Labe Labe sawmill, which was established mainly to produce cases for shipping desiccated coconut from Milne Bay, formed the whole of the milling operations when the Japanese entered the War in 1942. Those three mills, later controlled by ANGAU, but manned with their peacetime personnel, produced a very credible supply of timber during the early days of the struggle.

During the War, the Allied Armed forces, especially ANGAU established their own sawmilling companies. By the end of the war, approximately 190,000 cubic metres of sawn timber had been produced. With the cessation of hostilities in 1945, except for Port Moresby all the cities were in ruins. This devastation coupled with a revised policy of economic activity, created an immediate demand for sawn and seasoned timber. The demand for timber in Australia and the scarcity of shipping space, made it necessary for the bulk of timber for reconstruction to be produced locally. The Provisional Administration established, and operated government run sawmills in Lae and Rabaul.

[72] PNG Scientific Society Presidential Address 1952 "Forestry in New Guinea" J B McAdam

FAO in 1948[73], reported that in TPNG, there were some 11 sawmills operating which in 1947 produced about 21,000 m^3 (740,000 cu. ft.) of lumber. The Australian government operated a sawmill to train local sawyers and some skilled laborers. It was estimated that rehabilitation requirements will need almost 23,600 m^3 (830,000 cu. ft.) a year for the next five or six years. Minor forest products include sago from the Metroxylon palm, nipa palm leaves for thatching, mangrove bark for tannin, dammar gum, canes, and bamboos.

Since the War, and owing partly to devastation by war, and partly due to the expanded services needed to cope with development of the community, there has been a greatly increased demand for sawn timber in the Territory. This has led to the gradual building up of the local sawmilling industry. In 1952, the sawn output will reach about 10 million super feet of timber requiring some 20 million super feet of logs. Since the War, there has been an embargo on the export of sawn timber, but this has been eased. For some time, we have been sending out six and a half inch square bulks of hoop and klinkii pine to provide battery separator veneer which is in critical supply in Australia. Last year, our exports of this highly selected material exceeded 400,000 super feet. Now general lines can be exported provided the millers keep a sufficient stock in their yards to ensure local supplies.

Since the War, logs have been exported annually but these exports remain constant between one and one and a half million super feet. Recently a tender has been accepted for the purchase of some 70 million super feet of timber on the Trans Busu at about 7-8 million super feet per year. It is expected that this will boost the log export considerably in about twelve months. Within the last few months, exports of private logs from agricultural leases in the Lae area has commenced because of active clearing for the establishment of cocoa crops.

FAO reported that shortly, a modern plywood manufacturing industry will be established for processing the pines of the Bulolo Valley. It is expected that within three years the output will reach 30 million square feet of plywood on a 3/16-inch basis.

McAdam reported that shortly, a modern plywood manufacturing industry would be established for processing the pines of the Bulolo Valley. It was expected that within three years the output will reach 30 million square feet of plywood on a 3/16-inch basis. Already a start has been made on reforestation with the same species. (Hoop and Klinkii). Last year, 45 acres were planted. In 1952, 100 acres were planted, and in the nursery, there is stock for 300 acres of plantation next year. It is expected that the future plantings will be about 600 to 700 acres per year. At the end of the rotation (50 years), it is calculated that the annual cut will exceed 60 million super feet of logs as against the rationed cut of 10 million super feet from the virgin stands. There will be a great volume of early thinnings from the plantations in about ten years and this may well lead to the establishment of the first pulp factory in the Territory.

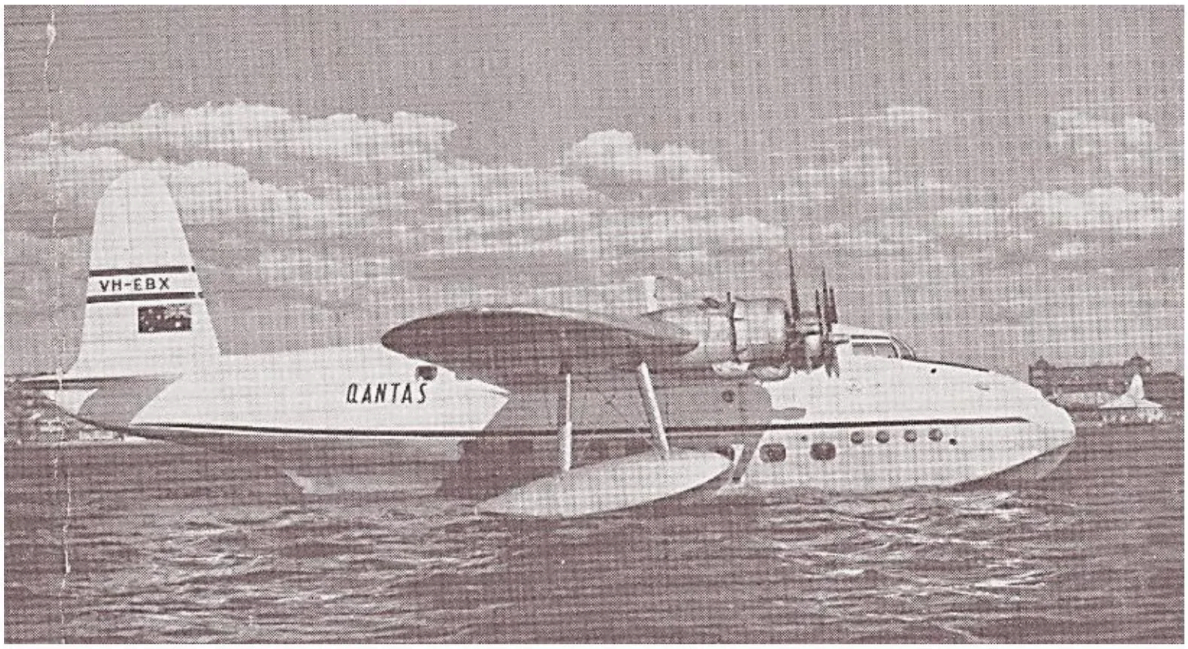
[74]By 1952, the local sawmilling industry had reached the stage where it was able to meet the local demand and output was some 24 thousand cubic metres per annum.

In 1952 though, only 4.5 thousand cubic metres of logs and 2.4 thousand cubic metres of sawn timber were exported.

[73] UNASYLVA Vol @ #6 Nov -Dec 1948

[74] UNASYLIVA

1954 ECONOMIC DEVELOPMENT PNG- *Sawn Timber/Plywood Manufacture*



Qantas Sandringham flying boat that Paul Ryan flew on from Moresby to Sydney for secondary studies at Bowral in 1954. Photo credit Paul Ryan[75].

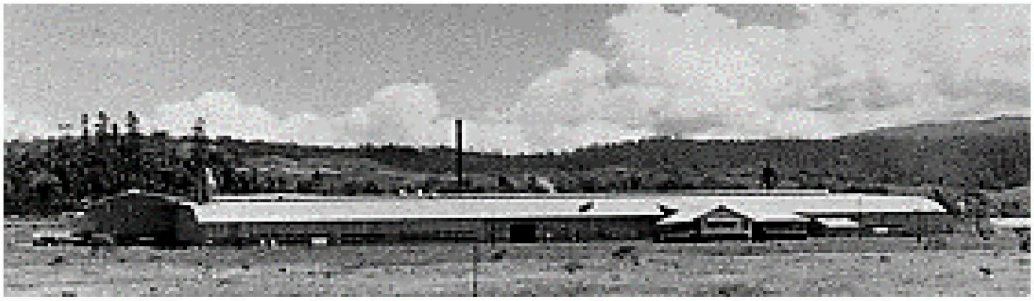
Aerial view of Port Moresby taken in 1963 with a Catalina moored in the harbor. Catalinas were withdrawn from service in PNG in 1965. Photo credit Ken Granger.

[75] Ref: PNGAF Mag # 9B-5B4R1 of 26/8/21. Eminent TPNG Forester Paul Ryan p 1-50.

Commonwealth New Guinea Timbers Ltd (CNGT)

As the mining operation for gold production declined in the Wau Bulolo area, interest developed in nearby stands of Klinkii pine. Commonwealth New Guinea Timbers Ltd (CNGT) was formed by an agreement, signed in 1952 between the Commonwealth Government and Bulolo Gold Dredging Limited.

In January 1954, a plywood mill and sawmill constructed by Commonwealth New Guinea Timbers Ltd. (CNGT). (partners were the Australian Government and Bulolo Gold Dredging Company) costing some A$3 million dollars (1,300,000 Australian pounds) commenced production. It was designed to produce high grade plywood veneer – about 30 million square feet annually, calculated on a 3/16th inch basis. Restricted cutting of these valuable softwoods and a reforestation program ensured that the timber harvested will be replaced.



1954 CNGT PLYWOOD MILL Bulolo. Source PNGAA

1960's Commonwealth New Guinea Timbers Ltd (CNGT) plywood mill at Bulolo. Behind the mill to the left is a prominent Bulolo topographic feature called the *Susus.* In Pidgin English translated as a woman's breasts. The large klinkii trees were not harvested because they contained too much metal shrapnel. Allied pilots on their way back from attacking Japanese positions around Lae and Salamaua used this easily identified feature for course correction, target practice and a safe place to jettison any undelivered bombs before climbing over the gap in the Owen Stanley Ranges on their return to bases in Port Moresby during WW II. Photo credit John Davidson.

In 1954 plywood production and the export of product to overseas destinations commenced and for the past 50 years the company has been involved in the conversion of both hardwood and plantation resource to high value end products. Output rose from 2.14 million square metres on a 5 mm basis in the first year to 3.34 million square metres valued at some A$2.9 million in 1969-70.

FAO[76] reported: that a major development in Australian New Guinea has been the establishment of the plywood factory at Bulolo, which commenced operations in January 1954 and it now producing substantial quantities of first-cl ass plywood, the bulk of which is being exported to America and Australia.

Kinoi, a senior and skilled crosscutter, felling a klinki pine. Kinoi was a Sepik elder. Watut – Bulolo ridge.

Photo credit Ross Lockyer 1969 CNGT Bush boss and forester.

Snigging a log to the Plymill.

Source. Annual Report to the UN re New Guinea 1/7/1953 to 30/6/1954.

Loading logs for the Plymill.

Source Dept of Territories 1959.

[76] FAO *Unasylva 1955 Vol 9 No 2 News of the World.*

Log Loading Bulolo April 1965.

Source University of Queensland Kathleen Vellacott-Jones Collection.

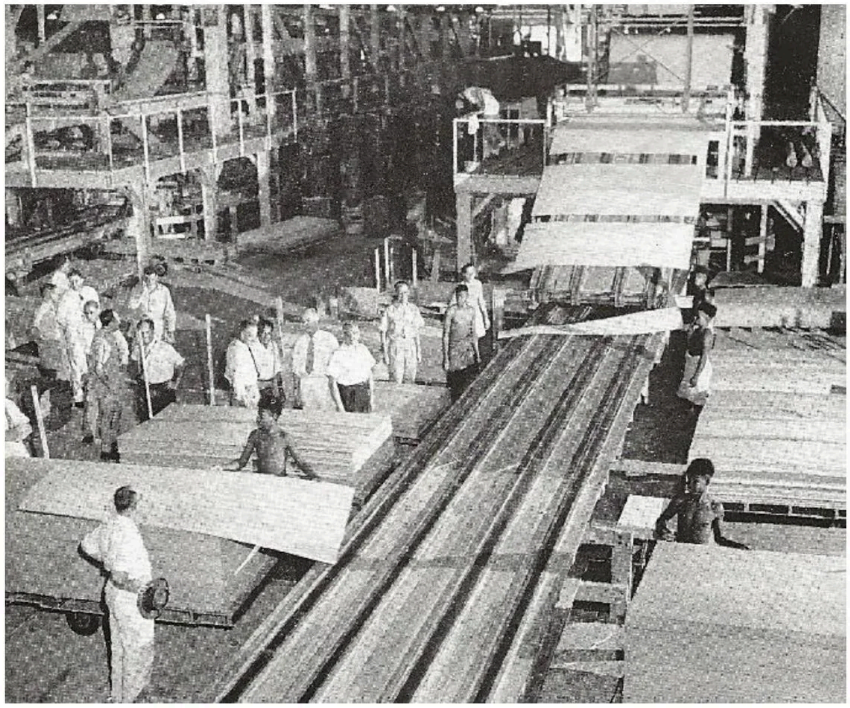
Transporting Logs Bulolo 1962.

Photo credit PNGAA.

Unloading Logs Bulolo Ply Mill.

Photo credit PNGAA.

Peeling logs for Commonwealth New Guinea Timbers Ply Mill 1960. Photo credit PNGAA.



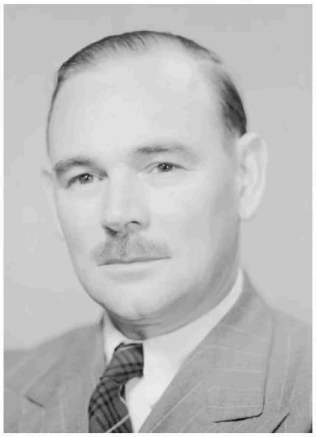
Interior view of the Commonwealth-New Guinea Timbers Limited (CNGT) Plywood Factory at Bulolo. Source Department of Territories 1959.

Transporting plywood Bulolo to the coast.

Source. Annual Report to the UN re New Guinea 1/7/1953 to 30/6/1954.

Markham Bridge. The longest bridge in the Territory, 1690 feet long spans the Markham River near Lae. Completed in 1955, it made possible the passage of heavy motor transport between Lae and the gold and timber producing area of Bulolo and Wau. Source Department of Territories 1959.

1957 Forest Policy Statement Hasluck



Sir Paul Hasluck[77].

Minister for Territories 1951 – 1963

The Right Honourable Sir Paul Hasluck.

Photo credit Wikipedia.

Forest Policy Statement by the Minister for Territories Hon P Hasluck MP 1957

1	Acquisition and reservation of an adequate permanent forest estate of 4 million acres (1.6 million hectares) estate within 10 years and 10 million acres in 20 years (4 million hectares.)
2	Establishment of formal forestry education at a forest training school at Bulolo about 1960 for training recruits for the Auxiliary and Third Division.
3	Establishment of a forest research institute to be established at Lae in conjunction with the Herbarium.
4	A re-afforestation program including expenditure in the Highlands for grassland reclamation.
5	Timber utilisation research into natural durability and preservation treatments.
6	Botanical collections and identifications.
7	Encouragement of a timber industry.

[77] Ref: PNGAF Mag # 4 of 21/11/20 p 15

1958. [78]

THE SEVENTH BRITISH COMMONWEALTH FORESTRY CONFERENCE

PRE-CONFERENCE TOUR OF PAPUA AND NEW GUINEA

DURING the week ending Saturday, 10th August, a round dozen foresters from widely scattered parts of the world were gathering in Sydney preparatory to the commencement of the above tour. The United Kingdom, East Africa, West Africa, the Caribbean, the Pacific, Canada and Australia were all represented. Leaving Sydney on a cold blustery evening and flying via Brisbane, the party duly disembarked in the tropical heat of Port Moresby at 6 a.m. the following morning. Mr. J. B. McAdam, Director of Forests, Papua and New Guinea, and his senior staff formed a warm and efficient welcoming committee. Members were very soon installed in the Hotel Papua and after breakfast and a change into tropical kit were taken to the Forest Office and briefed on the arrangements for the tour. From that moment until the completion of the tour, the programme was, to use an Americanism, "jam-packed" with forests, scenery and hospitality. From beginning to end, this heavy programme went through with expedition and efficiency.

After the initial briefing and issue of well prepared comprehensive documents embracing the various aspects of the tour, the party were guests of His Honour, The Administrator, Brigadier D. M. Cleland and Mrs. Cleland at Government House. In the afternoon the party visited experimental plantations in the Brown River area. Leaving Port Moresby, heading inland, one first traverses an open savannah type of country sparsely stocked with stunted *E. alba*. A few miles inland this type merges in a matter of chains into rain forest. Meandering through this level country is the Brown River adjoining which the Department has in the past few years laid down various experimental plantations. Results to date indicate that the most suitable species are Teak Kamarere (*E. deglupta*) and Cadaga (*E. torelliana*). As this work only started in 1954, no definite conclusions have been attempted by the Department; the visitors whilst appreciating the possibilities of this type of work were equally interested in the possibilities of natural regeneration work. As will be obvious later, the Forest Department here have a vast field of investigation to be explored with many more pressing items than this particular one. On the return journey the inevitable endless argument arose as to whether the savannah type was encroaching on the rain forest or whether the reverse could be attained by protection. All arguments came to an end when the bus broke down and, after several attempts at pushing it, the party were obliged to complete the journey back to the hotel by taxis.

On Monday morning a chartered plane, a Qantas D.C.3, took the party into the highlands of New Guinea. On this flight first indications were seen of the vast forest wealth of Papua and New Guinea; flying low over the tree tops it was possible to distinguish the various Araucaria species emerging from the tropical broadleaf canopy. The first stop was at Wau described in the official brochure as the "gold mining township at the head of the Bulolo Valley with its unique tilted drome" (*sic*). What the brochure didn't mention was the piles of wreckage to be seen in the vicinity of this strip varying from a U.S.A.F. Lightning plastered on a hillside to the remains of a Junkers aircraft which ran off the strip and demolished a Qantas office a week before our arrival. It was at Wau that the Japanese advance into Australasia was finally halted; a bronze plaque commemorates this historical fact. From Wau onwards including the visit to New Britain all territory suffered Japanese occupation and bearing that in mind, the recovery and development since the end of the War is all the more remarkable.

[78] REF: March, E. W. "THE SEVENTH BRITISH COMMONWEALTH FORESTRY CONFERENCE: PRE-CONFERENCE TOUR OF PAPUA AND NEW GUINEA." *Empire Forestry Review*, vol. 37, no. 1 (91), 1958, pp. 103–108.

Eucalyptus deglupta logs at Keravat Sawmill with 9 year old plantation behind. New Britain.

Tectona, 7 months from stumps, 9 ft. × 9 ft. Keravat, New Britain.

At Wau, New Guinea Gold Fields Ltd. are operating a sawmill and exploiting Hoop Pine (*A. cunninghamii*) and Klinki Pine (*A. klinkii*). There the party were for the most part introduced to those two species for the first time; in the remains of a 1941 plantation, in an exploitation area and as lumber in a sawmill. In the exploitation area after removal of the pines and any utilisable broadleaf species, the remainder of the stand is clear-felled and burnt and then planted with "tublings" of Hoop Pine in November-January. Although in arrears at present, the Department anticipates catching up with its replanting programme in 1958. Hoop Pine is preferred for the time being on account of the three decades of research carried out into its habits and requirements in North Queensland. Work on the seeding, germination and nursery technique of the Klinki Pine is well under way.

From Wau the party continued by plane to Bulolo where they were installed in the Pine Lodge Hotel which is run primarily as a holiday hotel for the personnel of Commonwealth New Guinea Timbers Ltd. The pine stands in the Bulolo Valley consist mainly of the two Araucarias mentioned above and are estimated to contain approximately 500 million super feet spread over 40,000 acres. This stand of timber is being exploited by a combined enterprise known as the Commonwealth New Guinea Timbers Ltd., in which the Australian Commonwealth Government and the Bulolo Gold Dredging Co. Ltd. are partners on a 51-49 %basis. Here again regeneration is by complete clearing and burning after exploitation and replanting with Hoop Pine on an estimated rotation of fifty years. In the afternoon the party were shown round the C.N.G.T. Ltd. plywood mill, a mill capable of producing 40,000,000 sq. ft. of 3/16 in. plywood per annum. This mill is claimed to be the most modern in the Southern Hemisphere. The visitors were mainly impressed by the high quality of the product, even perfect sheets being used as cores. The same evening the C.N.G.T. Ltd. were hosts at a very pleasant informal dinner after which films depicting forest subjects, gold-mining and wild life were shown.

On the Tuesday the main exploitation areas were inspected; demonstrations of mechanical hauling equipment were seen, the party being particularly impressed by what can best be described as a mechanical elephant used in loading logs on to trailers. A demonstration of tree climbing was given by native employees of the Forestry Department. Most members of the party could not refrain from commenting on the large amount of timber left behind in the forest after the removal of prime logs. No doubt time will rectify this. After the exploitation area the areas recently planted were visited; with a 96% survival figure the Department has certainly mastered the technique of handling Hoop Pine; fire is of course the ever present menace. In the afternoon the main Hoop Pine nurseries and various experimental plots were visited, followed by a visit to nearby dredging operations to see a 3,500 ton monster tearing up the bed of the Bulolo River to a depth of 80 feet. Apparently this and seven similar dredgers were all flown in piece by piece and assembled "in situ". This is certainly a country of astronomical figures and prodigious effort.

On the Tuesday evening the party were the guests of Mr. and Mrs. L. G. Cavanaugh, the Reserve Settlement Officer, at their home where they had an opportunity of meeting many members of the local forest staff and the staff of the C.N.G.T. Ltd. The outstanding feature of this party was a "sing song" performed by over a hundred natives in traditional war-dress; a somewhat awe-inspiring, in fact almost terrifying spectacle; it was a relief to know that these fierce warriors are, in real life, Forest Department employees in office and the field. Probably such things are infectious because it is alleged that certain of the guests were observed performing the "Rock 'n' roll" in the early hours of the following morning.

On Wednesday the party re-embarked in its D.C.3 and, after a short hop down the Bulolo Valley, were safely landed in Lae, where they were welcomed by the District Commissioner, Mr. John Preston White. After installation in the Hotel Cecil, no time was wasted in getting the party into cars and en route to a low country coastal rain forest area known as the Trans-Busu area. This area of some 20,000 acres is under permit to South Pacific Timbers Ltd., on a ten year period for the

Araucaria cunninghamii with Preservation plot on skyline. Bulolo.

Araucaria klinkii felling and loading operations. Bulolo.

removal of Category I species. Logs extracted are converted in the Company's veneer and saw-milling plant in Lae which was visited on the return journey. After lunch the Departmental saw-mill in Lae was visited followed by a visit to the Lae Herbarium and Botanical Gardens under the guidance of Mr. J. S. Womersley, Chief, Division of Botany, Forest Department. Considering these gardens were only laid out after the war, Mr. Womersley and staff are to be congratulated on progress made. The party had hoped to see some of the birds of paradise living in the garden precincts, but were unlucky; they were, however, very interested to see the New Guinea tree kangaroos which don't look like kangaroos at all, but are marsupials. The ladies of the Herbarium staff put on a very pleasant and lavish afternoon tea. Following tea the party visited the Lae War Cemetery, where Mr. S. L. Kessell on behalf of the party, placed a wreath on the Cenotaph. The day's proceedings were brought to a close with an official dinner presided over by the District Commissioner.

On Thursday once again the party climbed into its D.C.3 and took off for Rabaul on the north coast of New Britain. By the end of the three-hour flight, mostly over forested mountain country, the party learnt to recognise the giant Kamarere (*Eucalyptus deglupta*) towering out of the rain forest canopy; likewise, the occasional Kauri Pine. Equally interesting were the series of volcanoes, some extinct, some still "warm", on the approaches to Rabaul Harbour, which itself is the crater of an old volcano. On arrival in Rabaul the party was welcomed by the District Commissioner, Mr. Max Orben, Mr. A. Richardson, Regional Forest Officer, and Mr. E. Roach, manager of the Keravat Sawmill. No time was lost in starting the car trip to Keravat, some 25 miles away. This trip was through very rich agricultural country with well established typical tropical crops, predominantly coconuts, cocoa and coffee. At Keravat accommodation was provided for all in various staff bungalows and Mr. and Mrs. Roach turned their own home into what amounted to a continuous running buffet.

In the afternoon the Keravat plantations were visited. The species most used and most successful to date is Teak. Trees have been observed to reach 65 ft. in height

Araucaria nursery with 1950 plantation behind and natural forest in distance. Bulolo.

Photographs by courtesy of Sir Harry Champion

and 30 in. in girth in seven years. Unfortunately, the form is not all that is to be desired, mainly due to the persistence of side-branches running parallel to the main stem. A study of these Teak plots produced numerous points of debate. Were they second or fifth class Teak? Were they growing too fast? Should their growth rate be slowed down? The writer's own opinion is, firstly, that they could be described as second class and that second class Teak in the long run is worth more than first class specimens of most other species, and, secondly, that, as there is no difference in the durability of fast and slow grown Teak, there would have to be an appreciable difference in the strength factors to make Teak of this type unacceptable. Another promising species here is Balsa (*Ochroma lagopus*). A three-year-old stand had produced specimens up to 4 ft. 10 in. in girth; there is unfortunately a tendency to low branching. Adjoining the Keravat settlement is a ten-acre plot of Kamarere (*E. deglupta*) which at nine years old is, after various thinning practices, carrying trees of 130 ft. in height and 58 in. in girth. Bearing in mind that Keravat is only 4° South and practically at sea level, there is a certainty that a number of foresters from tropical territories will be experimenting with this species in the near future.

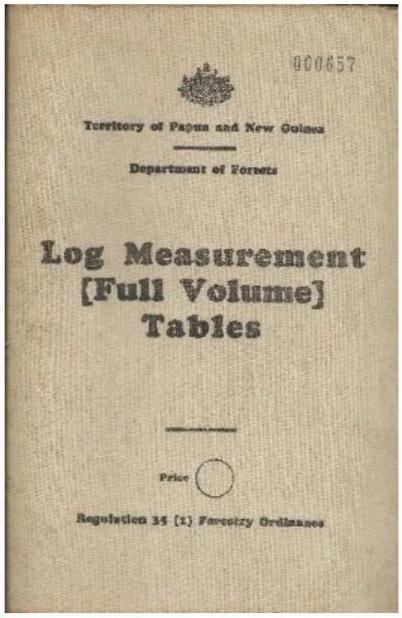
On Friday morning the natural rain forest areas adjacent to Keravat were visited and experimental attempts to induce natural regeneration were seen. The system employed here has been very heavy, in fact, almost complete canopy opening after exploitation resulting in profuse regeneration of Taun (*Pometia pinnata*); in fact, one might almost say in pure stands of this species. This work raised a fresh series of arguments. Is it safe to produce a normally non-gregarious species in almost pure stands? Would not this treatment bring about too drastic a change in the structure of the forest? Precedents were quoted, but only time will answer these questions.

By 10.30 a.m. the party rejoined their cars and set out for Rabaul by a shorter but more scenic inland route, giving many vantage points for the photographers of the party. In Rabaul the party were entertained to lunch at the Rabaul Club with members of the sawmilling community. Sitting in the pleasant surrounds of this typical country club, it was difficult to appreciate that twelve years earlier Rabaul did not exist, only devastation and debris remained; this club, Government buildings and all the signs of prosperous commercial enterprise have been created since the war. The return flight to Lae was made in ideal flying conditions the same afternoon.

With the return to Lae the study part of this pre-conference tour was over. The following morning the party embarked on a Qantas regular flight to Cairns via Port Moresby. At Port Moresby farewells were taken of Mr. Jim McAdam and his staff. To most of the participants in this tour it was their first introduction to Australian hospitality and will long remain a source of pleasant memories.

Thank you, Jim McAdam.

E. W. M.

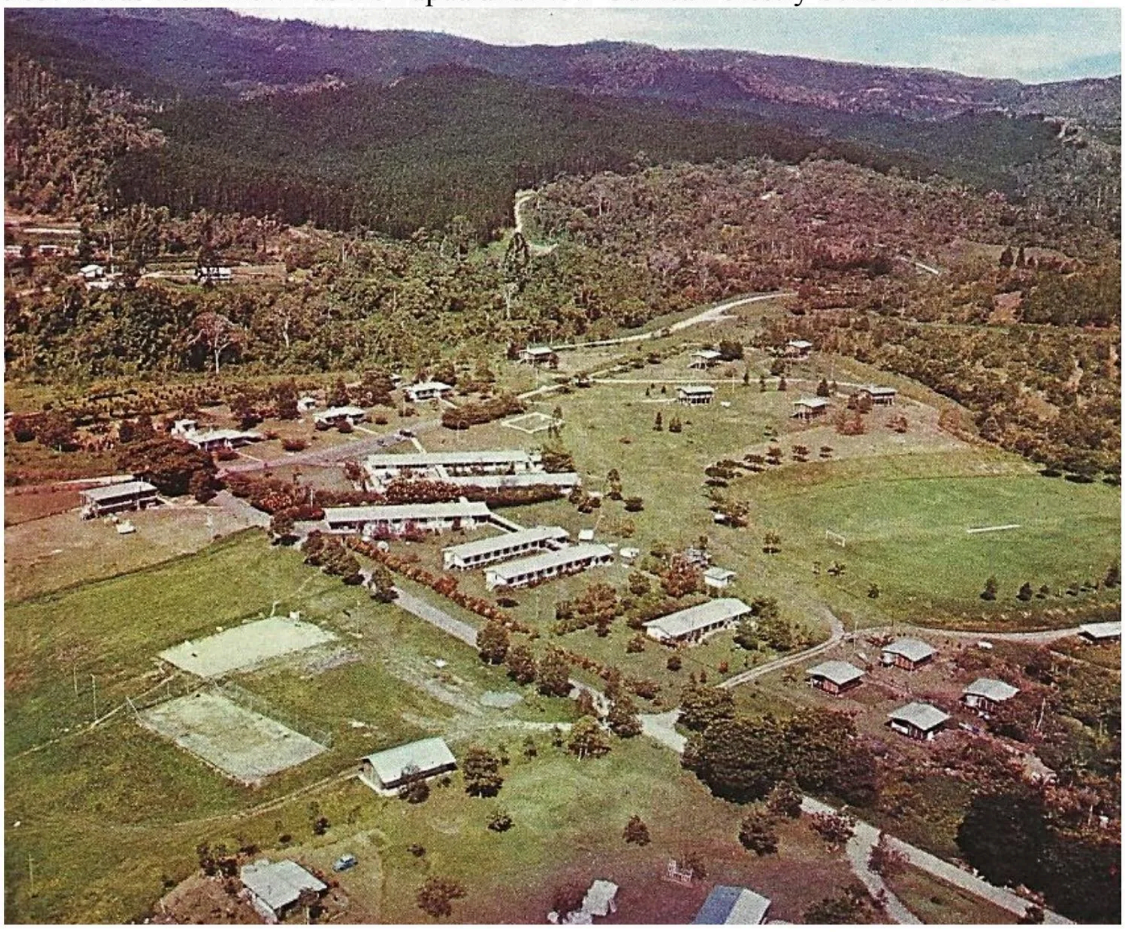


TPNG Department of Forests 1961 Log Measurement (Full Volume) Tables Super Feet regulation 35 (1) Forestry Ordinance

1960's Foot Report

The fifth intervention came in the 1960's with the United Nations Sir Hugh Foot Report[79] of 1962 and subsequent World Bank Economic Report[80] of 1965 setting out the framework for agricultural and forestry development. This included a major assessment of PNG's Forest resources and the need for agricultural development for oil palm clearing large tracts of forested land for the planting of oil palm. The development of this agricultural pursuit also saw PNG enter the global log export trade because the large-scale clearings created an enormous quantity of felled trees, which if not sold were to be burnt.

The establishment of the Bulolo Forestry College in 1962 was the commencement of formal technical training for Papua New Guineans. The first Principal was Joe Havel with Bill Finlayson, followed by Leon Clifford; then Robin Angus and later John Godlee. The College was opened by the Minister for Teritories, The Hon. C.E.Barnes MP on the 3rd of August 1965. It was then known as the Papua and New Guinea Forestry School Bulolo.



Bulolo Forestry College Bulolo. Photo Credit Murray Day Department of Forests 1973.

In early 1961, the Australian Government made a nationwide recruiting drive (in Australia) to interview and enlist six (6) potential Assistant Forest Rangers, as part of ten (10) students, to be the first intake for the Bulolo Forestry College. The new recruits included Bruce

[79] Sir Hugh Foot UN Visiting Mission Report to Trusteeship Council May -June 1962 and refer to page 36
[80] Refer page 37.

Anderson, Tony Crompton, Rod Hall, Tony Brown, Heiner Streimann, and Peter Eddowes under the first Principal of the school TPNG forester Joe Havel.

Joe Havel with students studying botanical specimens at the PNG Forestry College Bulolo. Photograph 1964 Dept. of Forests Port Moresby.

Pictured. Tony Crompton (standing) & Peter Eddowes (seated) & local field assistants. Training in forest survey work. Lower Montane Forest Bulolo 1963.

Photo credit Peter Eddowes.

Professor John Davidson(left) with the first forestry graduates on the day of graduation. From the left Joseph Ben, Diki Kari, Alec Chang (Fiji), Jack Noah and Oscar Mamalai. (Not in the photograph is Samson Gaviro Solomons). UNITECH 1976.

Photo Credit Gloria Davidson.

The end of 1976 saw the graduation ceremony for the first students. Two of the original students, Jack Noah and Joseph Ben are deceased[81].

[81] Oscar Mamalai personal communication 8 May 2019 Part B page 365-366

Forestry College Bulolo L to R. Norma Collis, Blue Ramsay, Joe Havel, Bill Finlayson, Heinar Streimann. Photo credit Norma/Cheryl Collis 1964/65.

Forestry College Bulolo group photo was taken of the staff and students. L to R Norma Collis, Olga Woolcott, Heiner Streimann, Arthur Ramsay, Leon Clifford, Evan Shield, Gerry Cullen, Vivienne Shield, Pat Cattanach. Photo Credit Janelle Clifford 1966.

1968-69 DEVELOPMENT PLAN PNG FOREST INDUSTRY

The House of Assembly announcing a development program for the PNG Forest industry (1968-69 to 1972-73) which greatly impacted on the forested lands of PNG. Much of the existing Forest development in PNG today stems from that plan.

The major objectives of that plan were:

- to ensure, relative emphasis to be given to agricultural and industrial development.
- rapidly increase the production of forest products.
- increase export earnings and local employment by encouraging local processing of forest products.
- improve the supply and quality of forest products for local use, establish a fully integrated forest industry by the development of industrial complexes working within permanent forest estates.
- foster a measure of local equity participation in such industrial undertakings
- increase the levels of training and employment in the industry
- enforce environmental protection standards
- adopt a logging code of practice. (In 1996, the PNG logging code of practice was formally adopted by the PNG government).

One example of such development was the North Coast of New Britain with rainforest areas being converted to oil palm plantations.

Hoskins Oil Palm development New Britain 1995. Photo credit Dick McCarthy.

Bialla Dick McCarthy 1971. We did find a tree or two at Bialla. Photo Credit DOF PNG.

Mount Ulawun Volcano. Photo credit John Davidson.

1969 Status Log Export, Sawn Wood Export, Plywood and Veneer Exports

The next expansion was the log export trade. In 1952 only 4.5 thousand cubic metres of logs were exported. In 1969, some 147 thousand cubic metres of logs were exported.

Extraction of logs for export Vanimo TA. Photo credit Dick McCarthy 1995.

Loading logs for export from Vanimo TA. Photo credit Dick McCarthy 1995.

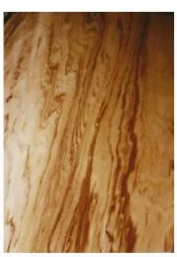
Log Pond, Bay of Tokyo Japan. Different compartments for different species and use.

Plylogs being extracted for plymill by water's edge. Photo credit Dick McCarthy 2003.

Tropical sawn timber exports, Bay of Tokyo Japan.

Photo credit Dick McCarthy 2003.

In 1952 2.4 thousand cubic metres of sawn timber were exported. In 1969, some 17 thousand cubic metres of sawn timber were exported.



In 1952 no plywood or veneer were manufactured for export. In 1969, some 2.48 million cubic metres of plywood (3.34 million square metres of plywood) and 12.4 million cubic metres of veneer were exported.

Veneer Western Province. Photo credit Dick McCarthy.

Potential of Wood Fibre - Pulp and Paper

The potential of tropical hardwoods as a source of raw material for cellulose fibre has been recognised for many years. Commercial utilisation has been low in development especially for the technical problems involved with pulping such a mixture of tropical woods given the range of diverse properties which is characteristic of the tropical hardwood forest.

Pulp and Paper The impetus to a more intensive evaluation of the pulping potential of mixed tropical hardwood species from PNG was given by the demand from the pulp and paper industry of Japan for raw material from throughout the Asia Pacific region. The technique of bulk transport of wood chips developed in conjunction with growth of this demand. The potential size of the industry was of national significance.

Case Study JANT Project Madang Gogol Woodchip Project near Madang

JANT Gogol TA woodchip project near Madang.

Photo credit Dick McCarthy 2000.

JANT Madang *Acacia mangium plantations.*

Photo credit Dick McCarthy 2000.

PNGAF Magazines of eminent foresters Ian Whyte, Paul Ryan describe this project in detail.

In 1969, the first trial batch of wood chips for pulp production were produced by JANT Madang.

In 1975, the Japanese Pulp and Paper Industry (probably Honshu) undertook paper-making Trial of plantation-grown *Eucalyptus deglupta*. The trials used samples drawn from the range of ages in the plantations established at Kerevat and from the provenance trials established at Baku outside Madang. For Kerevat, this involved the clear-felling of the 1957-58 plantation at Kerevat and shipping the logs to Japan for conversion to paper. The logs were trucked to the beach at Kabira where they were loaded onto a ship moored offshore. Des Harries[82]

Bay Of Japan. Unloading woodchips from Australia. Stockpiles include tropical woodchips. Photo credit Dick McCarthy 2003.

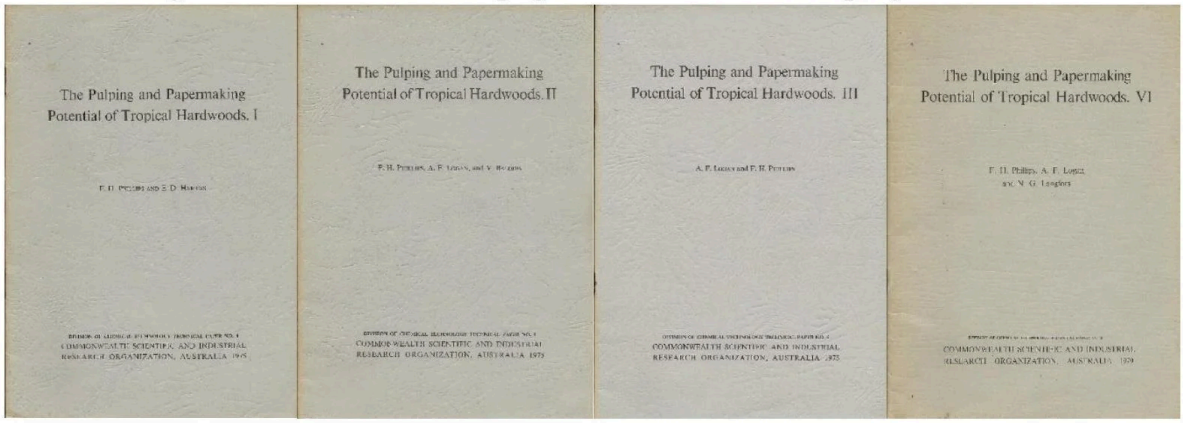
[82] Personal communication Des Harries 3Nov 2022.

Case Study - Pulp and Paper -Vanimo Timber Area Project.

The PNG Administration initiated a project designed to evaluate the pulping and papermaking potential of mixed tropical hardwoods in the Vanimo Timber area in detail in 1970 The intended outcome of this work is that it would then identify other timber resource areas in PNG as a source of wood chips.

To determine the quality and potential market quality of the PNG forests for pulping potential, the Department of Forests through its Forest Products Research Centre Hohola engaged CSIRO Forest Products Laboratory[83] to undertake that work. The CSIRO investigation[84], [85] initially selected Block 6 Vanimo Timber area (some 54,000 ha). Block 2[86] Vanimo Timber area (some 60,000 ha) was included in the investigations.

PNGAF magazine 9B-5A of 8/6/202 page 49-55 describes this project in detail.


The Pulping and Papermaking Potential of Tropical Hardwoods. I
The Pulping and Papermaking Potential of Tropical Hardwoods. II
The Pulping and Papermaking Potential of Tropical Hardwoods. III
The Pulping and Papermaking Potential of Tropical Hardwoods. VI

Vanimo Survey 1970. Photo credit Ian Whyte.

Dick McCarthy with (Big Ev) Evan Shield at scales at Ossima airstrip optimising CSIRO pulpwood samples for loads for the Cessna trips. Photo credit Ian Whyte.

[83] CSIRO Division of Chemical Technology Technical Paper # 1 1975 "*The Pulping and Papermaking Potential of Tropical Hardwoods 1* Phillips F H and Harries E D TPNG Forests 1955-1976.

[84] CSIRO Division of Chemical Technology Technical Paper # 2 1975 "*The Pulping and Papermaking Potential of Tropical Hardwoods 1* Phillips F. H., Logan A.F. and Balodis V.

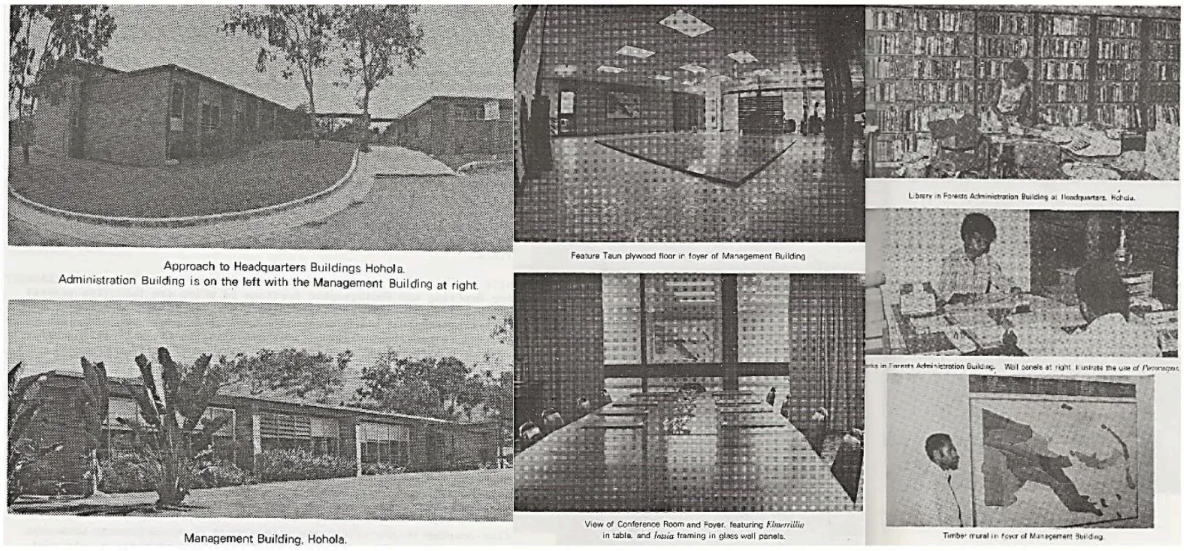
[85] CSIRO Division of Chemical Technology Technical Paper # 2 1975 "*The Pulping and Papermaking Potential of Tropical Hardwoods 1111*, 1975 Logan A.F. and Phillips F H

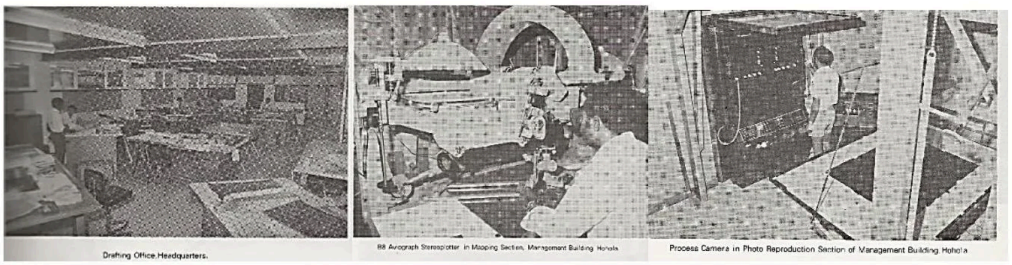
[86] CSIRO Division of Chemical Technology Technical Paper #34 1975 "*The Pulping and Papermaking Potential of Tropical Hardwoods 1* Logan A.F., and Phillips F H.

UNDER THEIR WATCH, WHAT WAS ACHIEVED? AN ATTEMPT AT FOREST ADMINISTRATION.

Photo Credit Cliff Southwell Headquarters of Department of Forests Konedobu till 1970

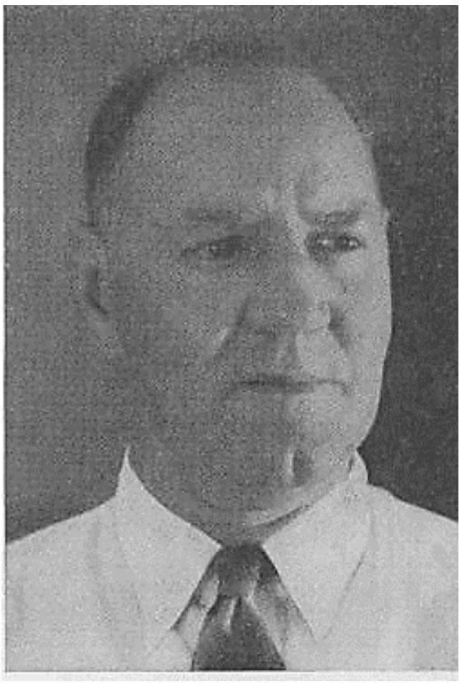
1971[87] New Forest Headquarters Hohola Port Moresby.


Approach to Headquarters Buildings Hohola.
Administration Building is on the left with the Management Building at right.
Feature Taun plywood floor in foyer of Management Building
Library in Forests Administration Building at Headquarters, Hohola.
Management Building, Hohola.
View of Conference Room and Foyer, featuring Elmerillia in tabla, and Intsia framing in glass wall panels.
Timber mural in foyer of Management Building.


Drafting Office, Headquarters.
88 Avioprah Stereoplotter in Mapping Section, Management Building, Hohola
Process Camera in Photo Reproduction Section of Management Building, Hohola

[87] Ref: 1971 TPNG Dept of Forests Annual Report

1938-1959



"JB" James Bannister McAdam MM 1910-1959
First Managing Director of TPNG forests.

Jim McAdam was a graduate of University of Queensland and Australian Forestry School. (dux in 1932/33). In 1934, he joined Queensland Forestry. In 1938 he joined the TPNG administration and made Chief Forester 1939.

With the threat of war in the Pacific, McAdam enlisted in the NGVR. After the Japanese invaded Salamaua in March, he led a party of scouts which established an observation post within a mile (1.6 km) of enemy positions. McAdam acted as a guide in the foray and was awarded the Military Medal for his outstanding service at Salamaua.

From 1944/45 he was Lt Col 1 Aust CRE (New Guinea Forests). In 1946 he became Director of Forests TPNG. He died in 1959.

Jim McAdam's forest management achievements as Director of the Department of Forests PNG reflect a rational economic approach to forest politics. His post-war activities were associated with providing timber for reconstruction of war damage and laying foundations for future forestry development. The demands and devastation caused by the war, the expanded services needed to cater for the immediate development of the community, plus an increased demand in Australia for woods, made visible for the first time a live picture of forest development.

McAdam took PNG as information of the forest resources accumulated, from a scene of early exploiters of PNG's forest resources for sandalwood, with a small sawmill industry supplying local needs and a small export trade of walnut logs to a sophisticated export industry of plywood, sawn timber, and logs to global markets, especially Australasia. It took World War 11 to provide an impetus to expand the scope of the forest from its traditional role.

McAdam undertook ongoing initiatives to ensure forest resources for future development capitalising on the results of the Army Forest Resource Survey group he commanded. At the same time, he continued to ensure traditional owners' rights were enshrined in forest legislation.

McAdam's foresight saw development of initiatives for reforestation and afforestation to ensure long term forest resources availability for the country of PNG.

At the same time, he established training initiatives for ongoing professional forester development with the establishment of the TPNG Australian Forester cadetship scheme. His objective was that this be the forerunner to the training of PNG foresters.

1959-1970

Bill Suttie Managing Director PNG Forest Service 1959-1970[88].

After graduating from the Australian Forestry School, in 1932 Bill Suttie joined the Queensland Department of Forestry. He was a founding member of the Institute of Foresters of Australia in 1935.

During the second world war, he was in command of 1 Australian Forestry Survey Coy in Papua New Guinea, under 1 Command Royal Engineers (New Guinea Forests) as the Headquarters Unit, with J B McAdam (head of pre-war New Guinea Forest Service) as commanding officer.

After the war, he held several positions with the Department of Forestry in Queensland, the last being District Forester Atherton in North Queensland until he resigned in 1956 to join the Department of Forests in the Territory of Papua New Guinea.PNG. Here, he rose to be the second Director of Forests in PNG. After retiring from TPNG he lived at Caloundra until his death in 1982.

Bill Suttie's forest management achievements as Director of the Department of Forests PNG are outlined in his Presidential address to PNG Scientific Society 1962 [89]. He linked political directives of Spender in 1951 and Hasluck in 1957 with development of the functions of the Department of Forests in resource investigation, forestry education, biological and utilisation research, reforestation, afforestation, and acquisition of a permanent forest estate.

Suttie noted that this marked a change from a period of exploitation to one of a consciousness of the need for a long-term forest conservation policy primarily in the interests of the native inhabitants of the Territory and the future need to train them in an awareness of the value of its forest resources.

Suttie outlined the extent of forests required for permanent or sustained supply of wood products and proposed measures in acquiring such a forest estate.

[88] Photo credit Linda Cavanaugh Manning. (background is Dave Dun 1957 Bulolo).
[89] PNG Scientific Society Presidential Address 1962 "A Transition Period" W R Suttie

1970-1975[90]

Don McIntosh TPNG Forests 1946-1973. Third Managing Director TPNG Forests 1970-1973.

Don's military service was in the Royal Australian Navy Service Number S10526, home port Sydney NSW with the rank of Able Seaman. He enlisted on 31 May 1945 and was discharged on 6 January 1947 (most fitting defence service for sailing the political seas of forestry later in his career). Don McIntosh 1927 -2015 joined Forests PNG in 1948 as a cadet forester. After completing his studies at the Australian Forestry School Canberra 1950-51, under the TPNG Forestry cadetship scheme where his classmates included Ted Gray and Kevin White, Don returned to PNG in 1952 He held positions included Regional Forest Officer Lae, Chief of Forest Management before becoming the third Director of Forests in the Dept of Forests PNG.

Kevin White Assistant Director till 1977

Kevin White at Brown River Teak Plantations 1970 with Evo Vai. Photo credit Dept of Forests TPNG

Kevin 1924-2012 joined TPNG forests in 1957. He completed the first stage of secondary education in 1941 and then worked for a spell in the Queensland Public Service in Brisbane, enlisting in the AIF in 1942 (QX57633/Q144919). He shipped out to New Guinea where he was taken on by 39 Light Wireless Air Warning Section as an electrician and later returned to Australia for radio technician training. Back in New Guinea he was attached to the 2nd Australian Corps Signals at the transmitter centre on the Sattelburg trail above Finschhafen, and later at Torokina on Bougainville. There at Torokina Kevin celebrated his 21st birthday and the end of the Pacific war.

After his discharge (26 Sep 1946), he re-joined the Queensland Public Service but opted for retraining under the Commonwealth Reconstruction Training Scheme. He firstly completed his secondary schooling and then became a Cadet Forest Officer of the Queensland Department of Forestry graduating at AFS in 1952.

The next five years were largely spent on rainforest management research in North Queensland. Kevin transferred to the Forest Department of the Territory of Papua & New Guinea in 1957 as Assistant Botanist and Plant Ecologist at the Botany Division of the Department in Lae rising to Assistant Director Dept of Forests PNG. After PNG he undertook various consultancies including FAO Bangladesh and ADB Nepal.

[90] Ref: PNGAF Mag # 4 of 21/11/20 p36. Ref: PNGAF Mag # 3 of 3/11/20 p 40. Ref: PNGAF Mag # 9B-5B4M2 of 27/7/21. Eminent TPNG Forester Don McIntosh p1-24.

Under McIntosh and White's Guidance Forest Management Achievements by1975 were:

Forest Resources. In the period 1946-1963 some 600,000 hectares were assessed by conventional methods. From 1964 to 1967 some 2.8 million hectares were assessed. As of 1975, a total of 5.2 million hectares had been assessed. The investigations confirmed that there was a resource of magnitude, it quantified the resource, and identified the areas considered suitable for development.

Botany

- Collection and maintenance of specimens of Papuasia plants. From the collections commenced in 1944, the herbarium collection at 1975 has over 250,000 PNG specimens. From the collections, followed taxonomic studies of the flora leading to various publications and training manuals.
- Development at Lae of the National Botanical Gardens with living collections.
- Intensive service in identification of plant specimens.
- Communication; extension services.
- National staff training.

Forest Industry

- From two sawmills in 1946 to 1975 with some 90 sawmills, one plywood plant; three veneer plants and one wood chip mill.
- An annual log harvest of some 800,000 m3 as of 1975.
- By 1975, export earnings of some Kina 15 million.
- Establishment of a Papua New Guinea Timber Marketing Advisory Panel.
- Development of an appropriate wood utilisation research program:
    (a) Determination of the properties and uses of PNG timbers.
    (b) Development of appropriate timber preservation treatments for sawn and round timbers.
    (c) Determination of kiln drying schedules.
    (d) Development of minor forest product industries.
    (e) Provision of mill wright services and extensive industry advice services.
    (f) Timber design services.
    (g) Technical publication services especially for building designs using local materials.
    (h) Training of mill operators.

Forest Management

- Development and administration of complex forest management agreements including regeneration treatment.

Reforestation

- Over 16,000 hectares plantations established at Bulolo/Wau, Kerevat, Port Moresby, Goroka, and Whagi Valley.

- Nursery and field techniques established for species as teak (*Tectona grandis);* Kamarere (*Eucalyptus deglupta*), hoop and klinkii pine (*Araucaria cunninghamii and A. hunsteinii),* Eucalyptus *and Pinus* spp.
- Country wide extension programs, especially in the Highlands.
- Natural regeneration techniques for cut over forests, growth studies, enrichment planting techniques.
- Intensive research programs for plantation species covering species selection, tree breeding, nutrition studies, protection from insects and fungal pathogens, growth studies, range management; extension practices, environmental planning.

Training

- **Sub professional training program** commenced in 1962 at Bulolo Forestry College which by 1975 had successfully trained some 421 trainees. In 1975, BFC could accommodate some 170 students.
    1. Inservice for expatriate field officers.
    2. Two-year technical certificate with entry level of form 2-3.
    3. Short vocational courses for supervisory staff training.
    4. 1967 – three-year course leading to a Diploma in Forestry.
    5. 1973-75 selected field staff 12-month course for a Certificate in Forestry.
    6. 1969 three-year Diploma of Cartography course.
- **Professional Training Program**
    1. Course activated in 1971/72 for a Forestry Degree course, commenced with 2 years science and two years at UNITECH Lae.
    2. Four graduates expected in 1976 and 10 in 1977.
- **Industrial training**
    1. Closure of government sawmills had a detrimental impact on training of industrial staff.
    2. Negotiations in more recent years lead to the establishment of an industry training centre in Lae (TITC).

REFERENCES

Burnett G 1908 *Timber Trees of the Territory of Papua. Reports and Catalogues* Dept. of External Affairs J Kempe Melbourne Australia.

Commonwealth New Guinea Expedition 1922 *Interim Report: Reporting on the Natural resources of the Mandated Territory,* Sydney.

Dargavel J 2006 *From Exploitation to Science: Lane Poole's forest surveys of Papua and New Guinea 1922-24* Historical Records of Australian Science. 17, 71-90.

Dept. of Forests Forest Products Research Centre 1970 *Properties and Uses of Papua and New Guinea Timbers* Revision 1970, Port Moresby

Eddowes P 1977 *Commercial Timbers of Papua New Guinea Their Properties and Uses* First published in 1961 Forest Products Research Centre Papua New Guinea.

Jacaranda Press 1973 *NEW HORIZONS Forestry in Papua New Guinea* Brisbane

Lane Poole C E 1925 *Forest Resources of the Territories of Papua and New Guinea*

Lewis DC 1996. *The PLANTATION DREAM* -Developing British New Guinea and Papua 1884-1942.

McAdam J 1952 *Forestry in New Guinea* Address to Papua and New Guinea Scientific Society Annual Report.

Phillips EH (1), Harries ED (2) CSIRO FPRC PNG 1975 *The Pulping and Papermaking Potential of Tropical Hardwoods I.* Requirements for an effective evaluation of the forest resources in Papua New Guinea.

Phillips EH, Logan AF), Balodis V. 1975 *The Pulping and Papermaking Potential of Tropical Hardwoods II.* Division of Chemical Technology CSIRO Australia.

Phillips FH, Logan AF, Balodis V 1975 CSIRO Division of Chemical Technology *The Pulping and Papermaking Potential of Tropical Hardwoods Properties of Pulps from Wood Chip Mixtures Representing Block 6 Vanimo Timber Area New Guinea* Technical Paper # 5.

Phillips FH, Logan AF 1975 CSIRO Division of Chemical Technology *The Pulping and Papermaking Potential of Tropical Hardwoods Properties of Pulps from Wood Chip Mixtures Representing Block 2 Vanimo Timber Area New Guinea* Technical Paper # 6.

Phillips FH, Logan AF, Langfors NG 1979 CSIRO Division of Chemical Technology *The Pulping and Papermaking Potential of Tropical Hardwoods Mixed Species from the Gogol Timber Area Papua New Guinea* Technical Paper # 10.

Ryan P 1972 Editor E*ncyclopedia of Papua and New Guinea*.

World Bank 1965 Report # 11153 *The Economic Development of Papua and New Guinea.*

ACRONYMS

AAD	Australian Antarctic Division
ACT	Australian Capital Territory
ACIAR	Australian Centre for International Agricultural Research
ACLMP	AusAid funded World Bank Land Mobilisation program.
ACP	African, Caribbean and Pacific States
ADB	Asian Development Bank
ADD	Air Dry Density
AEC	Administrators Executive Committee
AFAP	Australian Foundation for the Peoples of Asia & the Pacific Ltd.
ADB	African Development Bank
AFLEGT	African Forest Law Enforcement, Governance and Trade
AFPNG	Association of Foresters of PNG
AFS	Australian Forestry School
AFTA	Asean Free Trade Area
AIF	Australian Infantry Forces
AMF	Australian Military Forces
ANBG	Australian National Botanical Gardens
ANGAU	Australian New Guinea Administrative Unit
ANU	Australian National University
APEC	Asia-Pacific Economic Cooperation
APMF	Australian Paper Manufacturers Forestry Pty Ltd
APPM	Australia Paper and Pulp Manufacturers
ARD	Afforestation, Reforestation and avoided Deforestation
ASEAN	Association of South East Asian Nations
ASIO	Australian Security Intelligence Organisation
ASOPA	Australian School of Pacific Administration
ATIBT	Association Technique Internationale des Bois Tropicaux
ATL	Accelerated Tariff Liberalization
ATO	African Timber Organization
AusAID	Australian Aid Agency
BA	basal area
BCOF	British Commonwealth Occupational Force 1945-52
BDV	Brussels Definition of Value
"Beer Time"	Any time.
BFC	Bulolo Forestry College
BGD	Bulolo Gold Dredging Company
BNGD	British New Guinea Development (Company Limited)
BUC	Bulolo University College
C	Commonwealth
cm	centimetre
CALM	Western Australian Department of Conservation and Land Management
CBD	Convention on Biological Diversity
CDM	Clean Development Mechanism
CEFACT	United Nations Centre for Trade Facilitation and Electronic Business
CEPT	Common Effective Preferential Tariff
CERFLOR	Certificate of Origin of Forest Raw Material, Brazil
CFA	Commonwealth Forestry Association

CFE	Community forestry enterprise
CGTM	Cintra for Global Trade Model
CIF	cost, insurance, freight
CIFOR	Centre for International Forestry Research
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
C & I	Criteria and indicators
CNGT	Commonwealth New Guinea Timbers Bulolo
CO2	carbon dioxide
COC	chain of custody
COP	Conference of Parties
CPF	Collaborative Partnership on Forests
CRE	Commander Royal Engineers
CRE	CRE is a term inherited by RAE from RE and is the term for the Commanding Officer of a RAE unit which is headed by a Lt Col. Although the officer is called the CRE the name is also used for the name of his unit. E.g., CRE Aust Forestry Group or 1(NG Forests).
CSIRO	Commonwealth Scientific & Industrial Research Organisation
CHAH	Council of Heads of Australasian Herbaria
C&I	Criteria and Indicators
C&L	Certification and Labelling
CSD	Commission on Sustainable Development (United Nations)
CTE	Committee on Trade and Environment
DASF	Dept of Agriculture, Stock and Fisheries
DBH/ dbh	Diameter at breast height
DEPT	Department
DESA	United Nations Department of Economic and Social Affairs
DIES	Department of Information and Extension Services
DIY	Do-it-yourself
DPI	Department of Primary Industry
DOF	Department of Forests
DSB	Dispute Settlement Body
EC	European Commission ECA Export credit agency
ECE	Economic Commission for Europe
ECOSOC	Economic and Social Council of the United Nations
EEA	European Economic Area
EFI	European Forest Institute
EIA	Environmental Investigation Agency
EMAS	Eco-Management and Audit Scheme of European Union
EMS	Environmental Management System
ENB	East New Britain Province.
e.g.	For example
ENGO	Environmental Non-governmental Organisation
Etc	et cetera (more of the same)
EU	European Union
EVSL	Early Voluntary Liberalisation
FAO	Food and Agriculture Organisation
F &TB	Forest and Timber Bureau Canberra
FIM	Forest Information System

FMA	Forest Management Agreement
FPRC	Forest Products Research Centre Hohola
FRA	Forest Resource Assessment
FRG	Forest Red Gum
FRI	Forest Research Institute Lae
Forkol	Bulolo Forestry College
FSP/PNG	Foundation of the Peoples of the South Pacific
FCCC	See UNFCCC
FD	Forest department
FDI	Foreign direct investment
FIELD	The Foundation for International Environmental Law and Development
FLEGT	Forest Law Enforcement, Governance and Trade
FLEG	Forest Law Enforcement and Governance
FLONAS	National Forest logging concessions, Brazil
FOB	free on board
FPRC	Forest Products Research centre Hohola Dept of Forests PNG
FSC	Forest Stewardship Council
FTAA	Free Trade Area of the Americas
GAB	Girth above buttress
Gbhob	Girth breast height over bark
Gubab	Girth under bark above buttress
GIS	Geographic Information Systems
G8	Group of Eight (leading economies)
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GEF	Global Environment Facility
GFTN	Global Forest and Trade Network
GFPM	Global Forest Products Model
GHG	greenhouse gas
GIS	Geographical information system
GMO	genetically modified organism
GNP	Gross National Product
GPA	Plurilateral Government Procurement Agreement
GSP	Generalized System of Preferences
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
ha	hectare
IBRD	International Bank for Reconstruction and Development
IEA	International Energy Agency
IFA	Institute of Foresters of Australia
IFY	International Year of the Forest
IADB	Inter-American Development Bank
IBAMA	Amazon Environmental Institute, Brazil
ICA	International Commodity Agreement
ICCI	International Conference on C&I for Sustainable Forest Management
IDB	Inter-American Development Bank
IEA	International Environmental Agreement
IEC	International Electrical Commission
IFC	International Finance Corporation
IFF	Intergovernmental Forum on Forests

IHPA	International Hardwood Products Association
IIED	International Institute for Environment and Development
IMF	International Monetary Fund
INGO	International Non-Governmental Organisations
IPC	Integrated Programme for Commodities
IPCC	Intergovernmental Panel on Climate Change
IPF	Intergovernmental Panel on Forests
ISO	International Organization for Standardisation
ITC	International Trade Centre
ITTA	International Tropical Timber Agreement
ITTC	International Tropical Timber Council
ITTO	International Tropical Timber Organization
IUCN	The World Conservation Union
IWPA	International Wood Products Association
JICA	Japanese International Cooperation Agency
L of N	League of Nations
LRRS	Land Resource Soils Survey (branch of CSIRO)
LCA	Life Cycle Analysis
LEEC	London Economic and Environmental Centre
LEI	Indonesian Ecolabelling Institute
LULUCF	Land Use, Land Use Change and Forests
m3	cubic metre
MCCAF	McCarthy & Associates (Forestry) Pty. Ltd.
MHA	Member of House of Assembly PNG
MM	Military Medal
MUS	Malayan Uniform System
MEA	Multilateral Environmental Agreement
MFN	Most Favoured Nation
MIGA	Multilateral Investment Guarantee Agency
MOU	Memorandum of Understanding
MTTC	Malaysian Timber Certification Council
n.a.	not available
NAA	National Archives Australia
NARI	National Agriculture Research Institute
NB	New Britain
NAFTA	North American Free Trade Agreement
NGO	Non-Governmental Organisation
NHLA	National Hardwood Lumber Association
NRRP	Natural Resources and Rights Program
NT	National Treatment
NTB	non-tariff barrier
NTCC	National Timber Certification Council
NTFP	non-timber forest product
NTM	non-tariff measures
NWFP	non-wood forest product
NDS	Northern District Sawmills
NFCAP	PNG National Forestry and Conservation Action Plan
NGM	New Guinea Mainland
no.	number
NG	New Guinea

NGF	New Guinea Forces (relates to plant collection of Lae Herbarium)
NGIB	New Guinea Infantry Battalion
NGI	New Guinea Islands
NGO	Non-Government Organisation
NGVR	New Guinea Volunteer Rifles
NZ	New Zealand
NSW	New South Wales
NTSC	National Tree Seed Centre PNG Bulolo
OECD	Organization for Economic Co-operation and Development
OTO	Office of Trade and Investment Ombudsman
OIC	Officer in Charge
OISCA	Organisation for Industrial, Spiritual and Cultural Advancement International Japan.
OTML	Ok Tedi Mining Ltd
P or p	page
PEFC	Pan European Forest Certification Scheme
PIB	Papuan Infantry Battalion
PIR	Pacific Islands Regiment
PNG	Papua New Guinea
PNGAA	Papua New Guinea Australia Association
PNGAF	Papua New Guinea Australian Foresters Magazine Series
PNGFA	Papua New Guinea Forest Authority
PNGFIA	PNG Forest Industries Association
PNGRIS	Papua New Guinea Resource Information System
PNGUT	PNG University of Technology
POM	Port Moresby
P&C	Principles and Criteria
PEFC	Pan-European Forest Certification Framework
PGA	Plurilateral Agreement on Government Procurement
PPM	production and processing method
PPP	Polluter Pays Principle (other meaning Purchasing Power Parity)
QLD	Queensland
QF	Queensland Forestry
RAE	Royal Australian Engineers/Australian Army
RPC	Royal Papuan Constabulary
RRA	Rapid Resource Appraisal
RIIA	Royal Institute of International Affairs
RIL	reduced impact logging
RFE	Russia Far East
RTA	Regional Trade Agreement
RWE	roundwood equivalent
SAP	structural adjustment programme
SPS	Sanitary and Phytosanitary Measures
SFM	Sustainable Forest Management
SGS	Société General de Surveillance
SMS	Selective Management System Malaysia
SP	South Pacific
SPWP	Secondary Processed Wood Products
sq m	square metres
TAG	Trade Advisory Group of ITTO

TSS	Tropical Shelterwood System
TBT	Technical Barriers to Trade
TFF	Tropical Forest Foundation
TFRK	traditional forest-related knowledge
TNC	Transnational corporation
TRADC	Timber Research & Development Advisory Council Qld.
TRAINS	Trade-Basic Indicators of UNCTAD
TREM	trade-related environmental measures
TRIM	Trade Related Investment Measures
TRIP	Trade-Related Aspects of Intellectual Property Rights
UK	United Kingdom
UN	United Nations
Unasylva	Journal of FAO of UN
UNCCD	United Nations Programme to Combat Desertification
UNCED	United Nations Conference on Environment and Development
UNCSD	United Nations Committee on Sustainable Development
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Economic and Social Council
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNFCCC	Framework Convention on Climate Change of United Nations
UNFF	United Nations Forum on Forests US,
USTR	Office of the US Trade Representative
UNE	University of New England Armidale NSW
UNEP	United Nations Environment Program
UNI	University
UNITECH	University of Technology Lae PNG
UNRE	University of Natural Resources and Environment
UPNG	University of Papua New Guinea
UQ	University of Queensland
US	United States
USA	United States of America
USD	United States dollar
TPNG	Territory of Papua and New Guinea
TUBL	Territory United Brewery Ltd
TA	Timber Area
TA	Timber Authority
TRP	Timber Rights Purchase
Vol	volume
VSF	Victorian School of Forestry
WA	Western Australia
WB	World Bank
WCMC	World Conservation Monitoring Centre
WCO	World Customs Organisation
WSSD	World Summit for Sustainable Development
WTO	World Trade Organization
WWF	World Wide Fund for Nature